AVIATION WEEK

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OCTOBER 2, 1950

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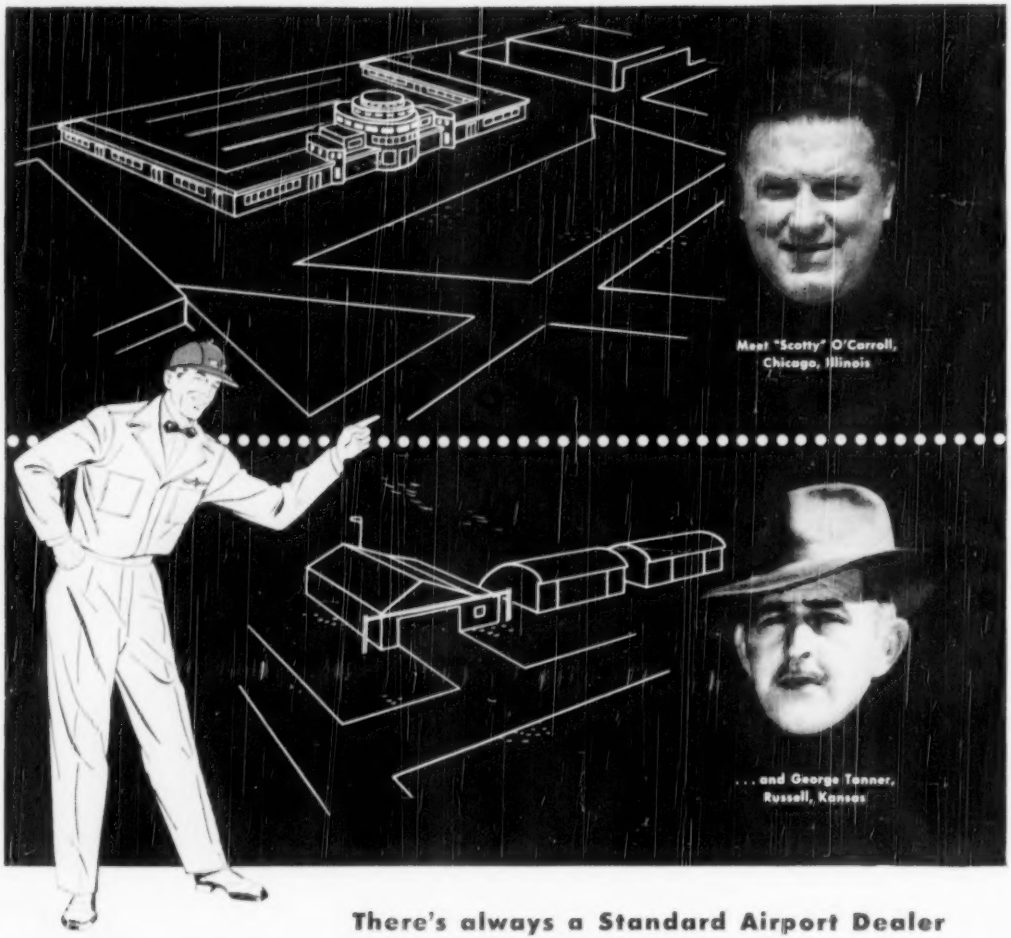

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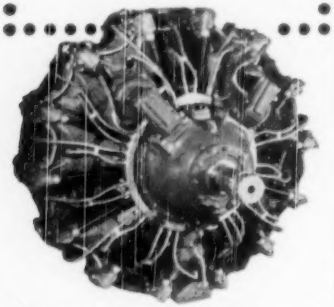

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Aviation Week

Member ABC

Volume 53 — October 2, 1950 — Number 14

Headline News

Arms Demands Plane Buying Power ... 12
Show Tips Off British Production Gains ... 14
Korea's Air Power Lessons ... 16
Lightplanes Prove Their Worth ... 17

Aeronautical Engineering

USAF Asks Convertaplane Action ... 23
Prestwick Pioneer for Utility ... 24
Brake Aids Free-Fall Salvage ... 25
Fokker Introduces New Trainer ... 28

Engineering Forum

Transports Used To Be Better ... 29

Equipment

Cable Matches Aluminum Expansion ... 32
Sparkplug Competition Keen ... 34

Aviation Sales & Service

Twin Bonanza on Military Tour ... 37

Air Transport

PAA Buys $21-Million Worth of DC-6Bs ... 38
Nonsked Organization Sets Goals ... 39
Viscount Completes Test Operations ... 41
ICAO Sets Up Search-Rescue Plan ... 42

Editorials

Our Turboprops Lead ... 50
Risking Death for Thrills ... 50

Departments

News Digest ... 7
Aviation Calendar ... 8
Picture Page ... 9
Who's Where ... 11
Industry Observer ... 11
Letters ... 21
New Aviation Products ... 45
Congressional Roundup ... 56
Briefing for Dealers ... 57
Shortlines ... 42
CAB Schedule ... 44
What's New ... 48

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On the way!

Here is the famous Convair Turboliner equipped with Allison T-38 Turbo-prop engines. Preliminary tests of the plane soon will be completed at San Diego, California.

On the way!

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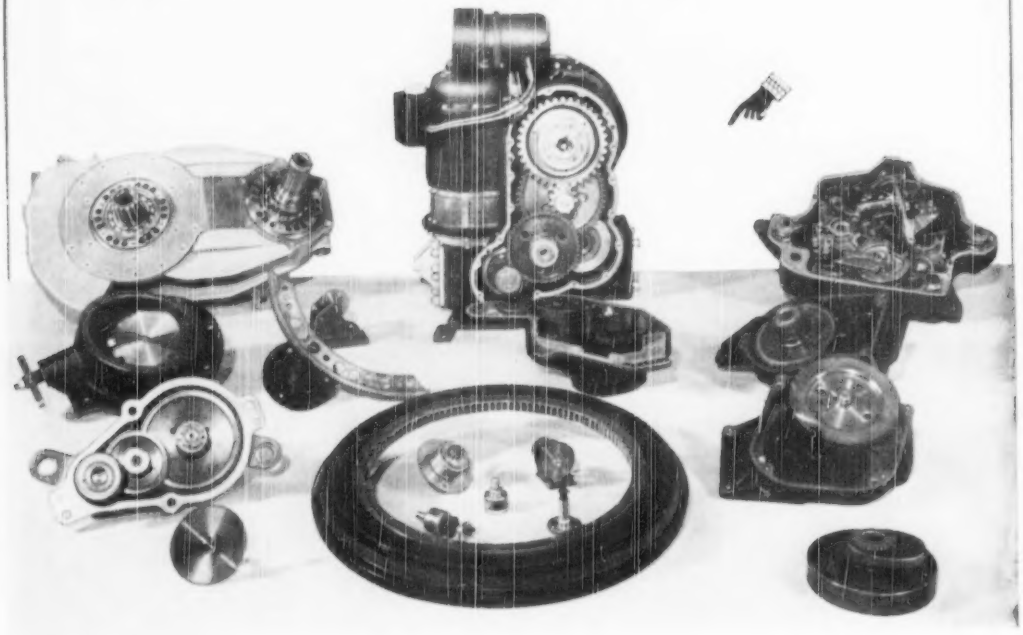

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NEWS DIGEST

DOMESTIC

Bell Aircraft Corp. received a "large production order" from the Army Field Forces for three-place H-13D helicopters. This is the 200-hp., skid landing gear version of the commercial Model 47. Dollar value and number of units involved in the order were not disclosed, although Bell says it is the largest single quantity of helicopters ever ordered by a military service.

Need for unified approach to the growing maze of air traffic problems was spotlighted in New York meeting of the Institute of Navigation, Radio Technical Commission for Aeronautics, and the Radio Technical Commission for Marine Services, held Sept. 19-21. Cmdr. Thomas D. Davies, USN, was presented with Thomas B. Thurlow award for 1949 for his work in developing the Pfund sky compass.

CAA type-approved the J-35 axial-flow turbojet rated at 5000 lb. thrust. The 450-D4, as the J-35 is known commercially, is the second Allison engine to get civilian approval.

First of three Boeing VC-97D command transports has been delivered to Strategic Air Command headquarters at Offutt AFB, Neb. The planes are fitted out as mobile advance base headquarters having living facilities for staff personnel and large command radio station. The upper deck seats 45 or sleeps 24, with 16 single upper bunks in the cabin walls. The lower deck has a private compartment for the commanding officer.

CAA certificated the AG-14, two-place pusher personal plane built by Anderson, Greenwood Co., Houston, Tex. Four additional planes are under construction. Estimated price is $4200-4500.

Personal aircraft shipments by nine companies in August totaled 25 planes valued at $168,040, according to the Aircraft Industries Assn. Shipments in July by eight companies were 19 planes valued at $102,485.

North American Aviation, Inc. has contracted to operate the Columbus, Ohio, plant of Curtiss-Wright Corp. after Jan. 1 for military aeroplane production. NAA officials hope to utilize the several thousand qualified C-W employees now there.

THIRSTY F-84E THUNDERJET practices mid-air refueling using British probe-and-drogue technique prior to attempted non-stop flight across the North Atlantic last week from London to New York by two F-84s. Three refueler planes, a Lancaster, a Lincoln and a B-29 participated. Bad weather disrupted the maneuver. Lt. Col. William D. Ritchie was forced to bail out near Goose Bay, Labrador, and Col. David C. Schilling had to land at Limestone AFB, Maine, after about 3300 mi.

Miniature thermal overheat warning switch used extensively as an overheat warning on helicopter and other gear box assemblies, aircraft generator overheat warnings or wherever temperature warning is desired. Extremely rugged construction and sealed against moisture and dirt. Supplied with wire or AN Type Fitting. Call or write for complete information or discussion of special problems.

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Removable contact pins make possible bench soldering of leads, quick, error free assembly of Breeze Waterproof Connectors and panel-type "Monobloc Miniatures."

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Pressure Sealed types are available for values up to and including 75 psi, or they can be specially engineered for greater pressures. They meet specified requirements of shock, vibration, salt spray, humidity and temperature cycling from −65° to +185° F.

Breeze "Monobloc" Waterproof and Pressure Sealed Connectors are engineered to your requirements in aluminum, brass or steel —in all sizes and capacities. They are fully tested and approved... cost no more than ordinary types.

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ACTUATORS: All types, sizes. Complete control systems engineered to requirements. Above: Landing gear actuator Fairchild Packet.

RADIO SHIELDING: For any type of high or low tension system. New type "unit leads" or re-wirable leads. Flexible shielded conduit.

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AVIATION CALENDAR

Oct. 2-3—42d National Aircraft Standards Committee meeting, Hotel Biltmore, Dayton.

Oct. 3-4—Ninth council for military aircraft standards, Air Materiel Command, Dayton.

Oct. 3-5—Middle eastern district meeting, American Institute of Electrical Engineers, Baltimore, Md.

Oct. 5-6—16th National Aircraft Standards Committee national meeting, Hotel Biltmore, Dayton.

Oct. 5-7—Ninth annual convention, Air Line Dispatchers Assn., Congress Hotel, Chicago.

Oct. 9-12—Autumn meeting of National Academy of Sciences, General Electric Co. research laboratory, Schenectady.

Oct. 9-12—Fifth annual industrial packaging and materials handling exposition, Convention Hall, Philadelphia.

Oct. 10—Meeting of the Joint Machine Tool Industry Mobilization Reserve Group, Royal York Hotel, Toronto, Canada.

Oct. 12-13—1950 conference on airport management and operations, Max Westheimer Field, North Campus, University of Oklahoma, Norman, Okla.

Oct. 16-20—1950 annual general meeting of the International Air Transport Assn., Fairmont Hotel, San Francisco.

Oct. 16-20—Fourth meeting of CAA Airport Advisory Committee, Ft. Worth.

Oct. 17—ICAO Middle East regional air navigation meeting, second session, Istanbul, Turkey.

Oct. 18-20—Annual national conference of the Society of the Plastics Industry, Inc., in cooperation with Harvard Business School, Swampscott, Mass.

Oct. 22-28—51st annual meeting, American Welding Society, Hotel Sherman, Chicago, Ill.

Oct. 24-25—Third biennial Materials Handling Conference, sponsored by Westinghouse Electric Corp., Hotel Statler, Buffalo, N. Y.

Oct. 26-27—Fifth annual Arizona aviation conference, sponsored by the aviation committee of the Tucson Chamber of Commerce, Tucson, Ariz.

Oct. 30-31, Nov. 1—Flight Safety Foundation annual Safety Seminar, Denver, Colo.

Nov. 29-Dec. 1—Eighth annual meeting of Aviation Distributors and Manufacturers Assn., Ambassador Hotel, Los Angeles.

Nov. 30—Airport fire safety clinic, sponsored by Committee on Aviation and Airport Fire Protection of the National Fire Protection Assn., Baker Hotel, Dallas.

Dec. 16—14th Wright Brothers Lecture, Institute of Aeronautical Sciences, U. S. Chamber of Commerce Auditorium, Washington, D. C.

Jan. 15-18, 1951—Plant maintenance show and concurrent conference on plant maintenance techniques, Cleveland, Ohio.

Jan. 29-Feb. 1—10th annual meeting of the Institute of Aeronautical Sciences, Hotel Astor, N. Y.

PICTURE CREDITS

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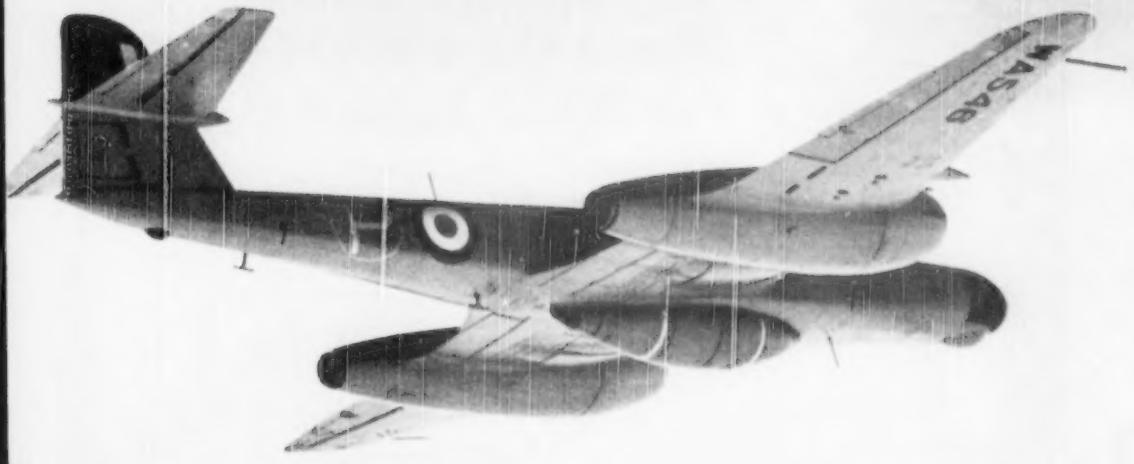
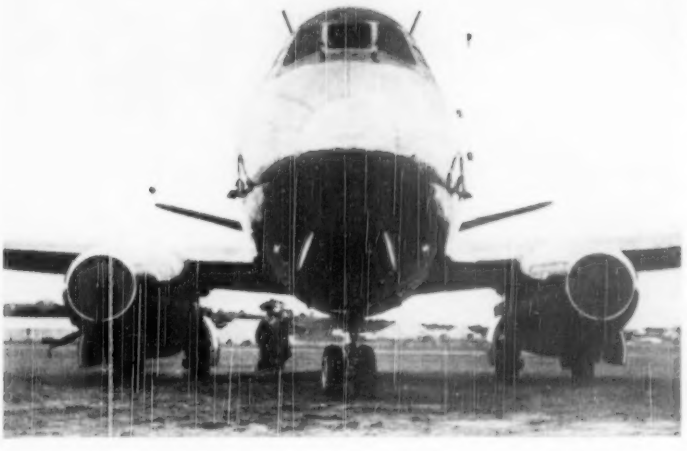


FLY-BY-NIGHT—The ubiquitous Meteor is now being produced in a two-seat night-fighter version, N. F. 11, by Armstrong-Whitworth. The extended nose houses complex radar tracking gear. The four 20-mm. cannon have been moved out to the wings.

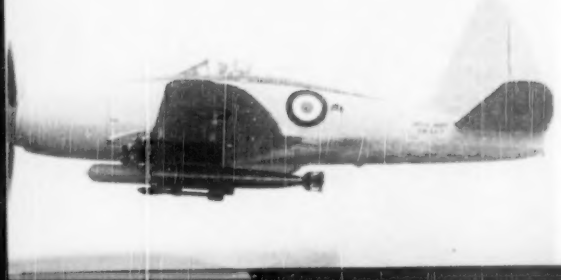
Britain Puts New Planes On View

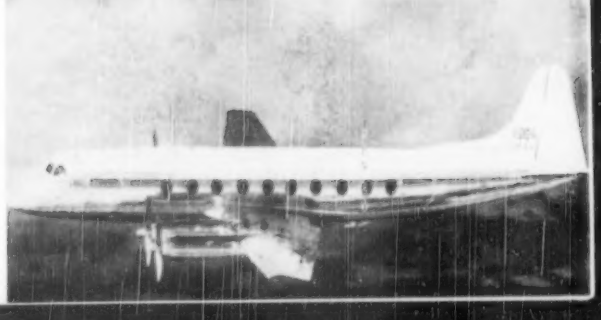


TAY TESTER—Modified Vickers Viscount (left) fitted with two 6,250-lb.-thrust R-R Tays is being used for high-altitude jet research.

WYVERN PACKS A WALLOP—Single-seat Westland turbo-prop fighter (below) hauls a torpedo and 16 90-lb. rockets plus its four wing-mounted 20-mm. cannon.

BEA's VISCOUNT—Vickers' 40-seat R-R Dart turboprop transport showed up at Farnborough carrying BEA's new markings. It cruises at better than 300 mph.





What's the success secret of Shell Airport Dealers?

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SHELL'S PLANNED MERCHANDISING...

Each month, as Shell representatives visit hundreds of airports, they help introduce dozens of merchandising ideas for increasing activity around the airport, for stepping up sales—anything that may help the dealer give better service and increase his revenue.

Through Shell's Aviation Department, carefully screened merchandising ideas are sent regularly to all Shell airport dealers in a special Aviation section of the magazine "Shell Progress."

Write to us for a copy of "Shell Progress."

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WHO'S WHERE

In the Front Office

A new slate of officers has been named to head the McCauley Corp., propeller maker. New president of the firm is S. G. Rose. Stepping up as vice presidents are Sidney M. Gamsa, chief engineer; Walter B. Powell, sales manager; and Walter W. Case, works manager. Charles J. Schaefer is assistant secretary-treasurer.

John W. Hinde has been elected president of Air Institute, Inc., Long Island City pressure equipment manufacturer firm. Formerly secretary-treasurer for the firm, Hinde started his instrument maintenance career with Pan American Airways. His previous position is being filled by Francis R. Dunleavy, who served as a director of Air Institute.

Robert J. Minshall, president of the Pesco Products division of Borg-Warner, has been made vice president-general manager of Marvel-Schebler Carburetor division under a new expansion program of the latter division's manufacturing activities. S. W. Gay will continue as head of M-S as a consultant of sales policy. G. V. Patrick, now Pesco's eastern sales manager for industrial products, will be transferred to the Marvel-Schebler division at Decatur as assistant general manager. Patrick was executive vice president of Cleveland Automatic Machine Co.

What They're Doing

Col. J. C. Vincent, co-designer of the famed Liberty engine in World War I and supervisor on design of a successful diesel aircraft engine, is retiring as executive vice president of Packard Motor Car Co. at the end of this year. Col. Vincent, who joined Packard in 1912 as chief engineer, actively directed all the company's various engine development work until his election to his present position in 1949. He is also credited with much of the design improvements made on the World War II Rolls-Royce-Packard Merlin engine.

Jack E. Beane, vice president of Diamond Aviation & Supply Co., hardware and air-frame supplier, will make his headquarters in the concern's Kansas City, Mo., office in order to provide closer liaison with manufacturers in the East and Midwest.

Changes

▶ Among the Airlines—G. deForest Lanier has been named general manager of Robinson Aviation, Inc. . . . Paul L. Benscoter has been appointed superintendent of stations for Northwest Airlines' Orient region.

Dean R. Johnson, assistant purchasing agent for Bonanza Airlines, has been made head of a new West Coast office set up by the airline in Los Angeles.

Honors and Elections

Amon Carter, publisher of the Ft. Worth Star-Telegram, has been chosen to receive the Elevcath Frank Hawks Memorial Award for "contributions to the development of aviation in America."

INDUSTRY OBSERVER

▶ An Italian manufacturer, reportedly Fiat, is due to be licensed to build Republic F-84 jet fighters for use in the military assistance program for friendly nations in Europe.

▶ Watch for the Air Force to order some off-the-shelf cargo transports in addition to the 22 recently purchased by the Navy (11 each R6D-1s—Douglas DC-6As with modifications—and Lockheed's elongated fuselage 1049s).

▶ Air Force plans to make some of its big new cargo transports double as aerial refueling tankers. Tanker versions of the Boeing C-97 and Douglas C-124 are involved.

▶ A valuable acquisition to General Electric Corp. in its Northrop Turbodyne purchase—confirmed last week—was the engineering staff which developed the Turbodyne and which is moving to GE with the engines.

▶ Helicopter manufacturers are watching with interest progress of the Boeing 502 turboprop as a likely future helicopter powerplant. Industry sources say that there is relatively little development going on now in small piston-engine powerplants. Light weight of the 200-hp. turboprop—184 lb.—and possibilities for using it in multiple combinations are being considered.

▶ Watch for Westinghouse to get back into the turboprop field, now that General Electric is renewing research on the propeller-turbine combination.

▶ British sources say that Nimonic 90, a high-performance nickel alloy developed by Mond Nickel Co., Ltd., has a load-carrying capacity 10 percent higher than that of blades made of the older Nimonic 80A when formed into gas turbine blades. This is at a temperature of 750 C. (About 1400 F.). At temperatures up to 870 C. (nearly 1600 F.), the new alloy is said to maintain its characteristics.

▶ Scheduling and operation of the NACA wind tunnels for aircraft industry development work will be the subject of a special report of a manufacturers' committee of which Mundy Peale, Republic president, is chairman.

▶ Increased vertical fin area is making its appearance on a number of new aircraft. Interesting fin treatment is seen on the Navy's new HO4S Sikorsky helicopter which attaches a large fin extending downward from the tailboom. Triple fin installations on new Navy Grumman AF series are another solution for the additional stability requirement made necessary by heavy loads.

▶ As supplier of the powerplants for the Republic F-84 series, Allison division, General Motors Corp., benefits along with Republic from the huge jet fighter orders that the company has received, some of them for the overseas military assistance program.

▶ A small production order of ZPN-1s from the Navy for anti-submarine patrols follows close on the completion of the first prototype N-type blimp, largest non-rigid airship yet built by Goodyear Aircraft Corp.

▶ Army interest in performance figures of the McDonnell XF-88 Voodoo twin-jet fighter may call for a second look at 1952 fighter procurement schedules. Air Force had decided not to order any XF-88s in quantity, mainly because of the heavy Navy orders already booked at McDonnell for Banshee F2H jet fighters, and problems of dovetailing delivery schedules of the two planes. But some Army factotums say the Voodoo's performance indicates it is probably the best-qualified plane now flying for troop support work, on the basis of its range and extreme maneuverability. The fact that its design has numerous and probably even supersonic capabilities is an extra dividend, not as important to the Army as the other characteristics.

AVIATION WEEK VOL. 53, NO. 14
OCTOBER 2, 1950

GOOD EXAMPLE of a fighter adapted to other work is this rocket-laden Republic F-84. But the Army isn't satisfied with an adaptation.

Army Demands Plane-Buying Power

Need of tactical support craft spurs move to let field forces procure these types.

By Ben S. Lee

Ft. Bragg, N. C.—Far-reaching shifts in the military aircraft procurement picture, affecting transports, fighters, liaison planes and helicopters are likely to take place soon.

If they do, it will be an eruption of the continuing interservice argument over Army tactical air support needs. This is still boiling under the outward crust of the familiar top-brass insistence that all is interservice harmony.

If carried out to its fullest extent, the shift may well mean that USAF will lose control of tactical aviation procurement to the Army, because of the failure of USAF to place sufficient emphasis on tactical support—a failure which has been glaringly apparent in Korea and has stirred a rising tide of criticism.

▶ **Congress**—The House Armed Services Committee is seriously considering a move to place control of tactical aviation under the Army. The plan envisaged would give Army control over: Tactics and techniques to be employed, and procurement of tactical support aircraft.

Air Force would retain responsibility for furnishing pilots, crews, facilities and maintenance.

An alternate plan which would put control of tactical aviation to the Marine Corps has been scrapped due to statutory ceilings on personnel strength, plus the fact that the Marine Corps already functions as the support arm of the Navy.

The Joint Chiefs of Staff are presently considering a request of the Army Field Forces to raise the weight limitations of aircraft which may be purchased by Army.

The ground forces are now restricted to 2500 lb. maximum for liaison-type aircraft and to 4000 lb. for helicopters.

Current thinking within working levels of the JCS is that the weight ceilings cannot be maintained and will undoubtedly be eased. To what extent is not known at this time. Whatever increase in aircraft weight is authorized, however, will place Army in a heavier and far more diversified procurement field.

▶ **Tactical Procurement**—The Air Force is currently charged with development and procurement of tactical aircraft. Recommendations made by the Army based on its requirements for air-transportable equipment as well as its needs for air support of ground troops are processed and (in keeping with USAF thinking) incorporated into USAF requirements in design specifications.

A decision to procure an aircraft, say Army sources, is based mainly on that plane's ability to meet USAF design requirements.

The Army design requirements come second. As a result, aircraft employed in tactical support operations have, for the most part, been "adapted" to tactical support instead of originally designed for tactical support. This is borne out by the views of Air Force commanders in Korea. See page 16.

Two years ago, to ease the joint problems of tactical air support for all services, a joint airborne test center was proposed to the JCS by Army Field Forces.

The proposed mission of the center was to develop requirements for tactical aircraft based upon joint decisions of the Army, Navy and Air Force. The Air Force demurred and the plan was shelved.

Last year, General Lawton Collins, Army chief of staff, took the bull by the horns and established the airborne center at Ft. Bragg, N. C., as an adjunct of the field forces. Air Force agreed to go along to a certain extent and simultaneously set up at nearby Pope AFB a field office filled jointly by representatives of the 9th Tactical Air Force and the Eglin Air Proving Ground Command.

The two service offices "cooperate" but do not necessarily issue joint decisions.

▶ **Army Air Arm**—Creation of the airborne center is expanding, however. Flowing records known now to the air

CONTENDER for Army Air Force procurement is Martin's XB-51, ignored by USAF.

industry it is likely to become the focal point of Army plane procurement if Army is given its own air arm through control of tactical aviation by the Joint Chiefs.

Army requirements in the field of tactical aviation, now treated as "suggestions," would become commands in reference to medium transports, helicopters, and, to some extent, the fighter field as it relates to tactical support of ground operations. The Army would also exert considerable pressure in light bomber design.

Specifically, the Army is interested in the following types:

• **Light bomber.** Glenn L. Martin Co.'s three-jet XB-51 is favored by the Army as the nearest approach to its requirements as a tactical air support weapon. It has recommended that if procurement of the XB-51 cannot be accomplished in USAF that certain design features of the plane be incorporated in a current production light bomber.

To date, Army enthusiasm for the XB-51 has been totally ignored by USAF, at least in currently planned fiscal '51 procurement schedules. If the Army gains control of tactical aviation it is likely that the XB-51 will go into production.

• **Fighter.** McDonnell's XF-88 Voodoo, Westinghouse-powered twin-jet fighter, is considered by Army to be the best answer to its needs for a tactical support fighter weapon. The XF-88 rates Army support on its extreme long range characteristics and its capabilities as an aerial weapons platform.

Republic Aviation's F-84 jet fighter-bomber, although satisfactorily performing its mission under design capabilities, is not considered wholly satisfactory. Army claims it is an "adapted" weapon.

Army wants a fighter designed with primary emphasis on range and endurance, secondly on horsepower, and thirdly, speed. Army claims high speed is not too important, since the function of the weapon would be for air-ground support not air-to-air support.

USAF claims this line of reasoning is fallacious. It contends that any fighter type should possess primarily a capability of offensive air action and a secondary emphasis on providing tactical support for ground. USAF plans continued emphasis on speed.

• **Transport.** From the standpoint of troop-carrying characteristics, Army is well satisfied with the Fairchild C-82 and its later counterpart the C-119 for paratroop operations as presently constituted.

▶ **Paratroop Phase**—Development of the paratroop-drop phase of Army operations, which was first fully recognized during World War II, has never been fully satisfactory, Army strategists state. Costs of irrecoverable items, such as parachutes, not to mention the high loss rates of personnel involved in drops, have made airborne paratroop operations exhorbitantly high.

Operation Portvex, large-scale joint Army-Navy Air Force operations held last year on Vieques Island off Puerto Rico, brought this fact vividly home to military planners.

Nearly 10 percent of the highly trained jump battalion employed in Portvex suffered major injuries in making the jump—lost to action before the action ever began. Another 180 men were "eliminated" by ground fire as the aircraft approached at slow speed (120 mph.) at 800 ft. for a 15-mi. approach to the drop zone; another 100 were "wiped out" by ground fire during the actual jump. Out of the 800-man battalion, 350 men were lost to action before the actual ground attack began. This represented a staggering loss of over 40 percent of strength before the fighting began.

▶ **Assault Transport**—Long concerned with the high loss ratio of airborne troop and equipment in paradrops, Army has insistently asked for development of an assault transport for use in following up the necessary paratroop operations from Fairchild C-82 and C-119 Packets.

Chase Aircraft Co.'s XC-123, designed to meet Army requirements for an assault transport has just concluded evaluation of USAF's Eglin AFB, Fla., Air Proving Ground along with the Northrop C-125 and a modified C-82 Packet.

Army Air Force thinking currently is to call for conversion of a number of C-82 transports plus a small contract to Northrop for the C-125 to meet assault needs until Chase can get into production. Eventually the Fairchild C-119 will fill medium troop and cargo-carrier requirements while the Chase C-123 will fill assault transport needs of Army.

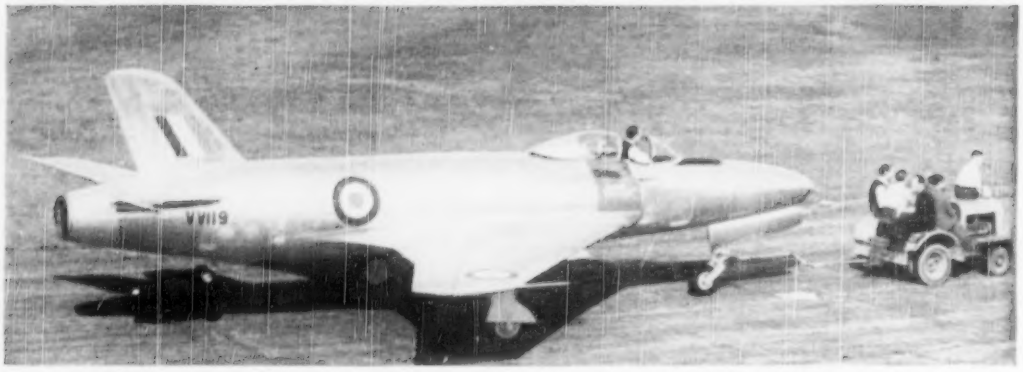
Army is also evidencing great interest in Fairchild's C-120 pod plane but is more interested in a four-engine, long-range version of the craft. The C-120 is scheduled to be flown to Ft. Bragg next week in demonstration for the airborne center.

▶ **Assault Helicopter**—Long eager to draw on Marine Corps development of the assault helicopter, Army, if it succeeds in getting increased weight authorization, will really beat the drums for helicopter development.

It has pressed for development of the Piasecki XH-16, a helicopter with fuselage compartment the size of the C-54 and a pod attachment the size of a Curtiss-Wright bus. Partially successful in this vein, Army has asked for stepped-up development of the XH-16. Army considers the XH-16 the probable answer to assault transport need for the next decade.

Also stressed are the ideal liaison capabilities of smaller helicopters.

Some Army tacticians expect to see smaller helicopters replace fixed-wing liaison aircraft soon because of their greater flexibility, and a step toward partial replacement of fixed-wing liaison planes with helicopters has already been taken by the Marine Corps.



Vickers Armstrongs 535, fastest aircraft at the SBAC show, is development of Royal Navy's production Attacker.

Show Tips Off British Production Plans

Canberra jet bomber and Y. A. 5 anti-sub piston plane go on the assembly line.

By David A. Anderton

Farnborough—There were no hidden wonders exhibited at Farnborough this year.

Instead, the keynote of the 1950 Society of British Aircraft Constructors display was consolidation—improvement and modification of last year's many prototype aircraft.

Planes shown were basically developments of older aircraft; modifications made to bring them up to date ran the gamut from mere engine changes all the way to complete redesign of wings and tail.

The show further proved that British aviation has reached a settling-down period in the postwar confusion. Apparently the British now have decided what types of planes their military needs demand, and how the needed types should be powered.

▶ **Straws in the Wind**—Significant tell-tales were the disappearance from the show of the Canberra Mk. 2 and the Blackburn Y. A. 5 (anti-submarine type) for extensive flight testing, the appearance of the three new anti-submarine types (Blackburn's Y. B. 1, Fairey's Type 17, Short's S. B. 3) and one in production (Avro Shackleton), and the new night fighter prototypes (Meteor N. F. 11, Vampire and Venom).

First event on the flying bill was what the show directors called the "heavy events," with eight entries participating in a series of flypasts.

Start of the display was signalled by the heavy, off-beat drumming of the Rolls-Royce Tay engines being run up in their Viscount research airframe. And following hard on the heels of the Tay-Viscount as it passed over the end of the Farnborough runway came the other seven planes, climbing and turning away from the field to get into position for their demonstrations.

Shortly after the Percival Prince took the air, the Tay-Viscount swung into the approach path for its high-speed run past the crowd.

Demonstrated in high-speed flypasts were these aircraft:

• **Tay-Viscount** (by Vickers-Armstrongs, Ltd.): This flying laboratory shares, with the Avro Ashton, the problems of getting high-altitude flight test data. Two Rolls-Royce Tay engines, rated at 6250 lb. thrust each, are fitted in underslung wing-mounted nacelles.

In the Tay-Viscount a standard Viscount airframe is used, with only small modification needed.

• **Shackleton** (by A. V. Roe & Co., Ltd.): This aircraft is the standard anti-submarine reconnaissance bomber now in production for the Coastal Command.

It is powered by four Rolls-Royce Griffon engines driving counter-rotating props.

• **Proteus-Lincoln** (by The Bristol Aeroplane Co. Ltd.): This aircraft is a converted Avro Lincoln which has been equipped with Bristol Proteus turboprop engines in two outboard nacelles. Each of these engines delivers about 5500 equivalent horsepower. The Proteus turboprops are undergoing their first airborne tests.

In its final form, the Proteus will be the powerplant for the Brabazon Mk. II, Bristol's Model 175 (tentatively called Britannia) and the Saunders-Roe Princess.

• **Varsity** (by Vickers-Armstrongs, Ltd.): Name is synchronous for the Royal Air Force, this bombardier and navigator training craft can accommodate nine students in addition to the crew of two. Plane is pretty much a standard Viking with a bombardier's gunner position underneath.

• **Ambassador** (by Airspeed, Ltd.): New on this airplane were the red markings and herald of British European Airways. Its flypast was completely inspectacular and quiet.

But it still remains far and away the most beautiful airplane to be found in anybody's skies.

• **S. B. 3** (by Short Bros. & Harland, Ltd.): Short's entry in the anti-submarine sweepstakes is powered by two Armstrong Siddeley Mamba turboprop engines.

The nose lines are made grotesque by the addition of a fairing to cover one of the radars, giving the plane the "droop-snoot" appearance. The S. B. 3 is intended to be carrier-based; its performance indicated, at least qualitatively, that it would be at home on a flight deck.

• **Sealand** (by Short Bros. & Harland, Ltd.): This is a fairly well known amphibian which Short Bros. is plugging as ideal for practically anything. It made a flypast on one engine at low altitude.

• **Survey-Prince** (by Percival Aircraft, Ltd.): This is a version of the high-winged Prince flying-liner, adapted for photographic survey.

The Survey-Prince caused a minor sensation by demonstrating its short stopping distance after landing, aided by reversible props of de Havilland make.

Judging from the noise, it was also aided by a heavy foot on the wheel brakes.

▶ **Flight Refueling**—As a diversion between the heavy and fast circuses, Flight Refueling, Ltd. demonstrated their air-

Refueling in flight was demonstrated with moderate success by Lincoln, Meteor.

Proteus turboprop flies in Lincoln nacelle.

Sapphire turbojets in Meteor variant are world's most powerful.

Sea Hawk detail shows arresting gear, bifurcated jet tailpipe.

borne system for filling aircraft tanks. During the first three days of the show, gusty weather or low clouds prevented the demonstration of hooking up, but the Lincoln tanker and the Meteor tankee flew past at low altitudes and broke contact in view of the crowd. The fourth day, the Meteor developed some minor trouble just before the scheduled flight, and canceled out the demonstration.

Following the partially demonstrated refueling, four planes participated in the fast circus.

• **Sea Hawk** (by Hawker Aircraft, Ltd.): This magnificent little shipboard fighter whipped down the field to begin the fast circus demonstration with one of the hottest flypasts of the show. The tiny craft, a version of a Hawker private venture, features split inlets (in the wing roots) and split outlets (at wing trailing edge and fuselage intersection). In the hands of Neville Duke, this newest Royal Navy production fighter showed a remarkable combination of speed and maneuverability.

• **Wyvern** (by Westland Aircraft, Ltd.): Special honors went to this craft for its startling performance with a military load of one torpedo and sixteen rockets aboard.

The Wyvern is a naval strike fighter powered by an Armstrong Siddeley Python turboprop engine; the high-frequency buzz-plus-whine of the engine is a recognition feature.

After passing down the runway at Farnborough in its high-speed run, the Wyvern was pulled up abruptly into a series of rolls followed by further acrobatics.

The Wyvern's behavior during the performance would have done credit to any clean airplane, let alone one with such a load aboard.

• **Balliol** (by Boulton Paul Aircraft, Ltd.) and **Athena** (by A. V. Roe & Co., Ltd.): These trainers put on a standard routine of aerobatics and flypasts, but it should be noted that their high-speed performance was about equal to that of World War II fighters.

▶ **Single Shows**—The remainder of the afternoon was given over to individual demonstrations of aircraft, ranging in size from the Auster Aiglet to the Brabazon Mk. 1, and in speed from the Scottish Aviation Pioneer 2 to the Vickers-Armstrongs Type 535.

First off the runway was the Avon-Meteor, which provided a show-stopping climb after a 60-second takeoff run. Immediately upon becoming airborne, this plane was pulled up abruptly into a steep climb, because otherwise the limit wheels-down speed would be exceeded in level flight.

The Meteor's Rolls-Royce Avon engines now fitted develop something over 8000 lb. thrust, producing a climb that has been estimated to be in excess of 13,000 fpm.

English Electric's Canberra provided one of the most unusual sights of the entire flying display on a very wet, rainy Friday.

After some tight maneuvering which seemed to take place in a 100-yd. circle, the craft made a high-speed run.

As the sleek Canberra roared down the field, spectators saw a strong condensation shock form across the entire wing, tip to tip.

The shock was visible as a semi-opaque light-gray sheet perpendicular to the wing, and appeared to flicker in degrees of opaqueness, apparently with the variation of the amount of water vapor condensed out of the sodden air.

The shock stayed in position on the wing until the plane pulled up, reducing its speed as it approached the end of its run.

A new night-fighter prototype, the

Ghost-powered de Havilland Venom, took off more rapidly than the Vampires from which it was developed. Its initial climb was slow (at least compared to the Avon-Meteor), but the acrobatic performance it put on showed just how tight a turn can be.

Gloster Aircraft Co., Ltd. entered a Meteor 8 for showing-off. The plane carried two 1000-lb. bombs and a belly tank, and at the conclusion of its demonstration, was flown in an inverted climbing turn into the landing circuit. While still inverted, the wheels were extended; the airplane was then rolled out for a normal approach.

Hawker's beautiful little P.1081, a sweptwing development of the Sea Hawk, used most of the Farnborough runway to get airborne. In its high-speed runs, Mach numbers of 0.85 were claimed; the claim appeared to be completely justified.

Vickers-Armstrongs new Type 535 (developed from the Attacker series) flew next, affording some sort of qualitative comparison with the P.1081. The 535 was obviously the faster of the two, although not by a large margin. It was inferior to the P.1081 in rate of roll and general maneuverability. In rolls, for example, it lost a lot of altitude. The plane came in for a landing in the tail-down attitude, touched its main wheels and tail wheels and ran down the runway nose high for much of its landing run. Only near the end did it pitch forward onto the nose wheel.

Last event of the afternoon was the slow flight of the Brabazon. During the several flight demonstrations which preceded its own, the Brab was towed to its position on the runway. When all eight engines had been run up, the huge plane majestically took the air. Some minutes later it returned for its first low circuit of the field, flying in a gently banked attitude. There were, of course, no acrobatics.

▶ **Summing Up**—The show, as always, highlighted the magnificent flying of Britain's best pilots and planes. But high speed and acrobatics are not always enough, and one wondered how some of the transports would have performed with a full load aboard.

Most military craft were flying at full gross weight and load, however.

Biggest disappointment was the biggest aircraft—Brabazon Mk. 1. In field circuits reminiscent of sailplane performance, the Brab proved nothing except that an underpowered airplane will fly if it is nearly empty.

All in all, it was an excellent show. It told the world that the British were beginning to produce badly needed service types, that they were building advanced transport types for foreign and domestic markets and that they have not run out of ideas for improvement of existing aircraft.

Korea's Air Power Lessons

They will influence plans for the future planes, equipment.

By Alpheus W. Jessup
(*McGraw-Hill World News*)

Fifth Air Force Advanced Headquarters in Korea—All of the infantry soldiers and officers on the battle line in Korea say they have never seen such support as that provided by air power in this war.

Air power has substituted for artillery all along the front, far beyond anything ever done before.

During a recent action along the northern sector, an infantry regiment launched a two battalion assault. It was apparent from the plan that a large area of the front was uncovered. But no one worried about it. They had been told "the Air Force will take care of it."

In World War II in France, the Ninth Air Force of the Tactical Air Command flew only 35 percent of its sorties in close support of infantry within the bomb line. Here from 50 percent to 90 percent of the Fifth Air Force's daily sorties are directed against enemy targets inside the bomb line. All told the Fifth has flown 16,689 combat sorties from June 25 through September 7 with Lockheed F-80s (7573), North American F-51s (7108), F-82s (282) and Douglas B-26s (1726).

So much close support has been flown that Air Force officers are afraid the infantry is getting spoiled. They recognize that with the shortage of field artillery there has been no choice but to use air power in its place. But the infantry is showing an increasing tendency to call for air strikes whenever the least enemy resistance or pressure is met.

▶ **Priority Missions**—Besides close tactical support, the Air Force believes it has two other priority missions: the destruction and elimination of enemy air power, and the interdiction and destruction of the enemy's war-making power, its communications and its war supplies before these reach the battle line.

They maintain that it is easier to knock out tanks, guns and supplies in the rear areas and in transit than after they are dispersed at the front. Against tanks for instance, they estimate it takes ten aircraft to knock out front-line tanks at the same ratio as one fighter-bomber operating in the enemy's rear.

While they recognize the infantry's primary interest is the destruction of the tank which is firing at it today rather than the ten tanks which might appear on the front next week, they hope that the infantry will avoid getting too dependent on the air weapons. That way there could be an equitable division of Air Force combat operations.

Normally, besides organic division artillery, there would be corps artillery including 155-mm. rifles and 8-in. how-

Alpheus W. Jessup (shown with Fifth Air Force commander Maj. Gen. E. E. Partridge) is industry's most seasoned and experienced reporter in the Far East.

Except for brief intervals of home leave, "Bill" Jessup has been in the Orient since he went out to Burma early in the war as an American observer with the British 36th division. He has been AVIATION WEEK'S and McGraw-Hill World News' bureau chief first in Shanghai and then in Tokyo since 1946. He was the first, and for long the only aviation business paper correspondent in the Far East. A survey taken just before the Korean action showed that all correspondents in Tokyo, except Jessup, represented daily newspapers, press services and radio.

Bill Jessup was on the spot in Korea when the invasion began and wrote his first report on combat effectiveness of the F-80 jet fighter for AVIATION WEEK as long ago as July, and from week to week has covered the air war from advanced bases in Korea and from Naval aircraft carriers.

The stories on these pages are more of this magazine's on-the-spot coverage of air action in Korea. AVIATION WEEK maintains a permanent bureau in Tokyo and coverage of air activities in the Far East will continue throughout the Korean action and always thereafter.

dizers in the battle zone. In Korea there are only the organic 105-mm. howitzers and 155-mm. howitzers. So the fighter-bombers have substituted for the big guns in attacking enemy tanks, artillery and troop concentrations.

▶ **Not Satisfied**—As great as air support has been, no operating Air Force officer is satisfied with the job which has been done, or the equipment available with which to do the job. Many lessons of Korea must be applied to the formulation of future military aviation budgets. But nothing in the 1951 appropriation should have any effect on the war's progress in Korea, since this "police action" should be over long before anything purchased with that money comes off the production line.

But the U.S., in their opinion, should be better prepared for future Koreas.

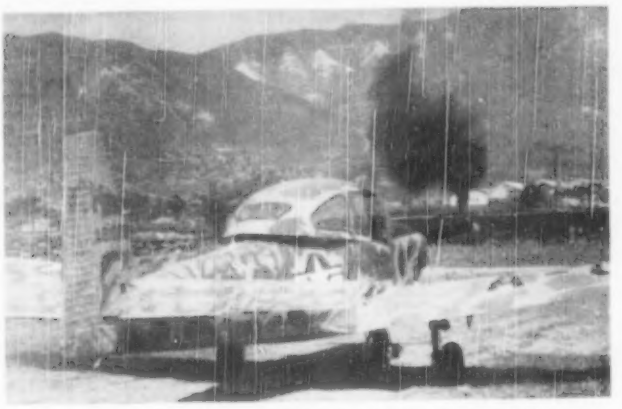
They caution, however, that the Korea lessons must not become an over-riding doctrine of air power. These are fine for pointing up the need for redevelopment of tactical air support but must not be so overemphasized as to cripple strategic air power. Korea has in no way lessened the danger of a bigger war requiring rapid retaliation with atomic bombs.

▶ **Engineers Job**—The first thing air generals talk about, surprisingly enough, is engineers. Since the F-80 has proved the practicability of jet aircraft in close support, they say that all future combat aircraft must be jet-powered. That means heavy fighter-bomber aircraft requiring long runways for takeoff, and extra-hard surfaced runways to withstand the impact at which the jet aircraft land. Normally the Army Corps of Engineers trains and provides the engineers and engineering equipment needed by the Air Force.

There still is only a single battalion of engineers working on airstrips in Korea. And they have only just now completed airstrips capable of handling the F-80s. One took only ten days to open for operational aircraft, although the F-80s aren't yet operating from it. The equipment and pierced steel planking did not arrive until almost two months after the war broke out.

Air officers say it is as mandatory to have engineers trained and equipped to put in forward combat strips rapidly as it is to have the combat aircraft. They want to put the jet fighter-bombers in forward locations where the aircraft can be on ground alert, close enough so that they can be attacking enemy positions within 10 to 15 minutes after the infantry requests support.

▶ **Vulnerability**—Air Force officers are more than ever convinced that any fighter-bomber must be able to live on its own in combat. It must have a fair chance to fight off or run from the



NAVION IN BATTLE DRESS somewhere in Korea has a five-fold mission.

Light planes Prove Their Worth

(*McGraw-Hill World News*)

With the U. S. 25th Division in Korea—Lightplanes again are more than earning their keep in battle. During the last month, the 16 aircraft of this division's liaison plane detachment have logged over 1600 hours, and all but 100 hours has been over the front lines.

Most of the hours flown have been by artillery spotters and by tactical air control directors. Artillery spotting is a World War II carry-over. But the direction of tactical aircraft by division liaison planes onto front line targets is an innovation of the Korean War.

▶ **Navion Missions**—L-17 Navions are used for the tactical air control work, primarily because they are equipped with VHF radio which can be channeled onto the fighter-bombers and the Tactical Air Control Party frequencies. The division liaison pilots in L-17's fly reconnaissance into enemy territory to a depth of 5000 yards all along the division front. As the F-51, F-80 and F4U close support aircraft come in to attack enemy targets inside the bomb line, the L-17 observers point out the targets to the flight leaders. First the observers provide a verbal description of the target and its location.

If it isn't enough, the L-17's fly as close as possible to the target or direct the artillery to fire a smoke shell at the target. They also drop smoke grenades onto the targets as means of identification.

Besides the direction of artillery fire and air attacks, the liaison aircraft are used for messenger and taxi service, air evacuation of the most seriously wounded and air supply of isolated combat units.

Perhaps the most sensational mission of this liaison section was its airdrop of 6000 lb. of supplies to a forward unit that was cut off. Six L-5's dropped water, ammunition, medical supplies and food for a battalion in one hour and 45 minutes. The average drop weighed 140 lb.

▶ **Cannibals in Korea**—Biggest difficulty for the liaison sections is keeping their planes flying. There just aren't any parts for the L-5's. So far, this unit has had to cannibalize one just to keep the others flying.

The L-17's have performed well, but these are considered strictly a field expedient. They aren't good for observation. The major advantage is the radio equipment. Parts are scarce.

What the liaison pilots say is needed is a new aircraft designed primarily for observation work. The ideal would be an aircraft with slow landing and flying speed, but which can be flown at a speed of 200 mph. A major worry is anti-aircraft fire. The observers like to fly at slow speeds, but they want to have a quick speed pickup to maneuver away from enemy ground fire. Neither L-5 nor L-17 provides this.

For observation a big Plexiglas bubble cockpit would be just right. There's no reason why the plane couldn't be a low-wing monoplane provided the wing is set back a little more than on the L-17 so that the pilot-observer can look straight down.

—A.W.J.

best the enemy has. Many critics have pointed to the loads of bombs which the Chance Vought F4U Corsairs, Douglas AD-3 Skyraiders, and North American F-51 Mustangs are able to take into the air and to the time which these aircraft can spend over the target area.

Admitting that these are admirable characteristics, airmen believe it would be impossible to operate much conventional aircraft against enemy jet-powered opposition. Also, these aircraft are much more vulnerable to enemy ground fire than jet aircraft. Part is due to the construction of the jet engine, part to the getaway speed and maneuverability of the jet plane.

What the air generals see, however, is a continuing need to keep fighter-bombers prepared and ready for close-support operations. The F-80 has developed into a fine close-support aircraft. Originally equipped to carry five-in. rockets and machine guns, it now is being modified to carry napalm tanks and bombs as well.

Until the Korean war began, very little had been done about adapting the F-80. Several tactical air officers were convinced that it could do the job, but no one had proved it. This has been and is being done. Soon the F-80s may be getting off with a napalm tank on each wing tip and eight rockets plus two heavy bombs hinging from pylons under the wings.

This may not be as great a load as that hauled by the AD Skyraider. But the difference is considered a small price to pay for the ability to live in the air against enemy jet aircraft.

A small group of F-84s may get a trial in Korea to determine their effectiveness and adaptability as a ground-support weapon. A major fear is that the F-84 will require longer and sturdier runways than practical in forward combat areas. Its greater range may compensate for this, however. If the F-84 proves impractical, then there will be need to work on an aircraft which can replace the F-80 for close support.

► **Night Fighter Needed**—Another aircraft need is a good night fighter, or rather all-weather fighter. It must be built from the ground up and not be a "battledized" adaptation as so many have been. The development of high-speed, high-powered day interceptors is almost certain to influence any enemy to develop bad-weather and night-bombing tactics. It is believed possible as a result, that nearly all interceptors should be all-weather soon.

Supplies for the Korean campaign have generally been good. Since the Japanese surrender, the Far East Air Force had developed the Far East Air Materiel Command (FEAMCOM). When the war broke, FEAMCOM had a $200-million inventory in Air Force parts and equipment. Included were 155,000 separate items. The inventory is now up about 30,000 items.

In July, FEAMCOM's shipment from the U.S. totaled 7000 tons, while shipments to the using units were 17,000 tons. August figures may be double those of July. FEAMCOM has a full complement of repair and work shops as well. F-51 parts may run low several months from now. Engines probably will be shortest. The plan is to cannibalize F-51s as long as parts are required.

► **Aircraft Going Up**—The airlift phase has been picking up recently. More cargo and personnel has been moved daily to the battle area. But it is impossible to determine whether this results from poor logistical planning or because there is a shortage of surface shipping. Most likely this results, as so often happens in the early phases of an operation, from uncertainty. Everyone wants to get his cargo to Korea right now, even though it may be days before he intends to use it.

It is doubtful that more troops would have been rushed to Korea faster had there been more aircraft in the beginning. Men and equipment were moved in rapidly by ship. Furthermore, necessary heavy equipment could be gotten in only by ship.

Theoretically, a division might have been moved from the U.S. to Korea entirely by air. This would have taken about one week with the full mobilization of all civilian transport aircraft. And the troops would not have had any of the heavy weapons they need.

Several technical representatives are present in Japan and Korea. They have full freedom to obtain information around both the tactical squadrons and the major repair stations such as FEAMCOM. They report both to the military and to their home offices. One seldom makes a formal report to the military, partly because the military frequently cover up on reports which might reflect improperly on an officer or the Air Force.

The Navy hopes to get a new chance at the "super" carrier as a result of the Korea war. They are aiming at an all-jet air arm, with the exception of submarine search and reconnaissance planes. But it will be difficult to develop without a larger carrier with proper size catapults and heavy deck construction to handle heavy jet aircraft. Conventional aircraft will continue to be useful for the Navy in submarine search and reconnaissance.

But a replacement will probably be sought for the Lockheed P2V Neptune. The Navy isn't satisfied with its range of 1000 miles and return. It wants a plane with a combat radius of at least 1300 mi.

PAA-AOA Merger Is Now Official

Pan American World Airways last week took over the employes, assets and routes of American Overseas Airlines.

State Department officials had almost completed negotiations with France and Italy to permit the company to operate its newly authorized routes into Paris and Rome, according to PanAm spokesmen.

All workers scheduled to be laid off eventually because of the merger must receive monthly pay until July 5, 1952—the date of expiration of the overseas certificate.

The monthly pay will be one-twelfth of the past twelve months' pay, unless the worker finds another job of equivalent pay.

In case the worker finds a lower-paying job, he gets the difference, until July 1952.

NWA to Pay Passed Dividends

Northwest Airlines directors voted to pay dividends in arrears on the 4.6 per cent preferred stock for the past two quarters, plus a fourth-quarter preferred dividend due November 1. Total payments come to $331,929.

In a board statement the dividends were justified "in view of improved earnings and financial condition of the company."

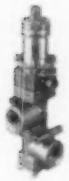
Net loss for 8 months through August was reported as $1,776,003 on operating revenues of $30,798,056. But net earnings for the period from June through September are estimated at about $3½ million.

The directors said September returns would probably equal August's net profit of $1,006,866 on total operating revenues of $4,866,424.

P&W Reactivating Southington Plant

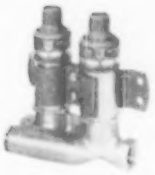
Pratt & Whitney division of United Aircraft Corp. was scheduled to reactivate on Oct. 1 the Southington, Conn., branch plant which the engine company used during World War II. The plant must be completely retooled and will be used to make components for assembly at the main engine plant at East Hartford, Conn. Production at Southington is not expected to start for several months.

At World War II peak production, the plant employed approximately 4000 workers and a similar number is expected to be put to work as soon as tooling and training programs are completed.



AV-91 — Electro-Magnetic, 3-Way Valve. ⅛" Tube Size. Operating Pressure to 1,500 p.s.i. For Air, Oil and other Fluids, both High and Low Temperatures.

AV-9 — Electro-Magnetic, 2-Way Shut-Off Valve. ½" Tube Size. Operating Pressures to 1,500 p.s.i. For Air, Oil, Gases and other Fluids. Weight: 1 lb. 9 oz.



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LETTERS

She Went Nonsked

I'm back from round trip to California on a non-scheduled airline. AVIATION WEEK has from time to time taken up the nonskeds' fight, so I thought you might be interested in one female reaction.

I heard about Columbia Airtouch System the way every other passenger on my flight had—on the radio: $75 to California, with 10% off on the return trip. I had three weeks and $163.85, plus friends in California.

I made my reservation a month in advance, specifying a four-engine plane as my choice. They didn't have me leaving on the Friday I chose, but they did have me for the following Saturday. Cynical friends said they didn't think $163.85 was so cheap for a vacation—if you couldn't be sure of getting there. Why not pay "a little more" and go coach on a scheduled airline? I poohpoohed the whole idea. After all, my ticket included $50,000 worth of free insurance. If I didn't get to enjoy my vacation, my family would.

The night before my departure a friend warned me that I was not likely to get what I thought I was getting. She had just returned via Columbia from California on a two-engine plane which she knew must have done duty with the Wright brothers. She staggered off the plane deafened and ranted, together with some of her co-passengers who had paid $90 for their tickets.

Saturday afternoon I called Columbia to check my reservation. Then began the runaround which started me seething. Not a single direct answer to any direct question.

Q: Was the 8:00 o'clock flight still scheduled? A: What was my name? I gave my name, and the flight was going out.

Q: Was it a 4-engine plane? A: There was one scheduled for tonight, but . . . had I paid $88 for my ticket? No, I hadn't.

Q: What was my name again? Just a minute, please. Ten minutes later the fellow stuttered his regrets. I was not on the 4-engine plane's reservation list. I explained the special circumstances of the reservation I'd made a month ago, the fact that I had delayed my flight a day especially for that plane, etc. Would I hold on a minute, please? Another ten minutes elapsed. Could he call me back, please? There was some confusion.

Half an hour later. They were so sorry—they found I had, indeed, been originally scheduled for the 4-engine. But unfortunately that plane had just been canceled last night.

Ordinarily I'm mild-mannered, but the obvious dishonesty of all this . . . If they had simply told me that the $75 fare (which I had paid) entitled me only to a two-engine plane, I might have been annoyed, but hardly furious. As it was, I asked the clerk why I hadn't been notified of the change so that I might have made other plans.

At that hour I had no alternative but to take the flight. But also I had no intention of using my return ticket. I would turn it in. The unhappy clerk (and mounting was that he was no less unhappy over my plight than he was over his pay) agreed that I was right. I should have been notified, but it had all happened so suddenly, and what with the war in Korea . . . And furthermore they did have some 4-engines left . . . .

Being unimpressed with Columbia Airtouch's contribution to the Korean war, I put down the phone feeling something like a small volcano with lid—and dialed TWA. I was not going to be so unscrupulously manipulated, and all for a paltry saving. The courtesy of the TWA reservation clerk's authoritative answer was balm to my enraged spirit. I made my reservation and agreed to pick up and pay for my return ticket in California. It was going to cost $126, and I thought it was a bargain at that point.

The confusion at the air coach counter at LaGuardia that night was gargantuan. There were no cues on it. There was no indication that anyone was in charge of anything nor knew anything about flights, baggage hours, gates, etc. We had to be weighed in there, and our flights assigned on the spot. There were people in line with me who had paid everything from $69 to $99 for their tickets, purchased from different agents. Some of them landed on the same flight, too.

It was a humid night in New York, and we all steamed together into an orderly, weary, and uncertain mass before we got our turns at the counter. Then—one of the same at the gate.

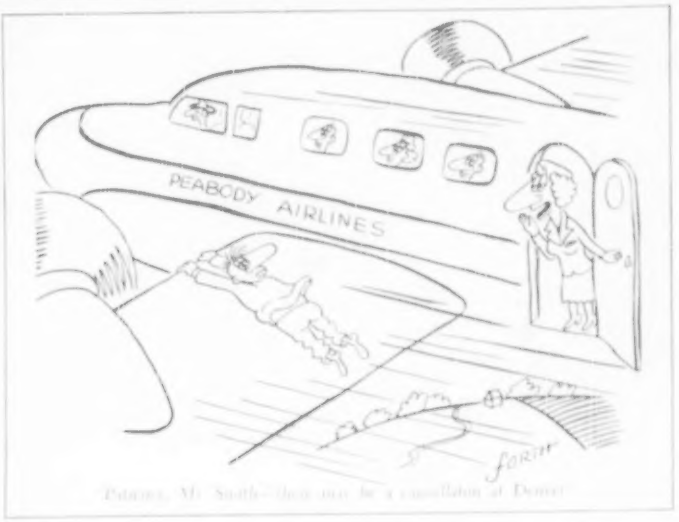
Plane was scheduled for 8:30 p.m. "near Gate 8." It was to be a World Wide Airways flight.

Well, "near Gate 8" turned out to be a little congested area where innumerable unscheduled planes were taking off and arriving. The two men who were doing out the flights there didn't know what was next or whether indeed the World Wide flight would be leaving from there. In fact they professed not to know anything about what was going on at all. All they could see was a mob—hot, steaming, at moments mutinous at the possibility of not being able to watch a plane if the right flight should be called. Everyone had to pass overhead to view a plane.

The men in charge at the gate were competing against the public address system, which was announcing the regular airline arrivals and departures. Obviously the non-scheduled lines were having no hospitality suite spread for them there, no chance at the public address system, and apparently also some trouble in getting mechanics to check planes. It was a mess. The whole mob was glued together immovably until 1:30. You can imagine how happy I was finally to get aboard that World Wide Constellation.

It was a nice plane. Once under way, everyone was in high spirits at finally having managed to get aboard anything that looked as if it could fly. There were about 27 passengers, I believe, young for the most part, and including about a dozen boys in uniform. A hostess on board took herself agreeable but was short on information, which was what most passengers were interested in. She didn't know, or wouldn't say, where we were due to land. She certainly had no idea when we'd hit California. According to the schedule given us originally in Columbia, we were to stop at Chicago, Kansas City, and arrive at Oakland "on ground point" at 9:45 a.m. Sunday, California time. Hah!

We did go to Chicago. Then Kansas City—with time off for breakfast at 3:30 a.m. But imagine how unpriced I was to find myself next at Albuquerque! No one



Patience, Mr. Smith—there may be a cancellation at Denver.

got off there—just a fuel stop, apparently. We had changed hostesses at Kansas City, and the second one was just about the most evasive girl I've ever run into. She had no idea at all about where we'd hit Oakland.

No wonder. We didn't go to Oakland. We went to Burbank.

By the time I was put enough out of a drumming bubble to think, dimly, that this was certainly a round-about way of getting to Oakland, I was quite awake when our hostess told us that we were all getting off here, and that we could claim our luggage at the World Wide counter! There we were at noon, Sunday, two hours late, and still several hundred miles from our destination. It turned out that there were 13 of us who thought we were going to Oakland. The whole affair began to feel a little dreary and GI like.

The other 13 and I stomped into the World Wide counter with blood in our eyes and demanded to know what the idea was. And the fact that the personnel there were polite and gracious didn't really do much to squelch the feeling that something had been put over on us.

The man in charge said he would "charter a plane" to take us to Oakland, and of course this was part of our past flight, and who didn't we go and have lunch—by which time he would have some news for us. It seems he knew nothing of what to expect from each plane load, hadn't known when to expect us, not even that some of us were not terminating at Burbank. He just had to meet contingencies as they arose, suffer any headaches which Columbia sent him, and take over from there. I almost felt sorry for him than to myself.

I swallowed a disgruntled lunch, thinking uncomfortably of the friend who had been waiting at Oakland to meet me from 9:45 a.m. Back to the World Wide counter to get the happy news that they had succeeded in getting a plane for us, which was to leave at 9:00 p.m.

Just across the terminal, Western Air Lines (they operate Oakland-Burbank shuttle, I gather) was just announcing a flight to Oakland, leaving immediately. I tore over, asked if they could put me on. They could, but they were leaving now. I didn't have my bag, so threw the clerk a plea for an extra two minutes. My bag arrived at the stairway just being wheeled away and the door locked in the face of a very frustrated gal.

It turned out better than I was expecting at that time, though. Another plane turned up, and World Wide plunked me into a 4-engine coach (labeled New England Airlines, as I recall), distinctly without frills, at 4:00 p.m. We reached Oakland at 6:00 p.m.—in all, 8 hours late.

Yep, my friend was still there. He had resumed ever so well to many hours before me on it Oakland, of course, knew another thing about Columbia Airways. He had been meeting every plane from the East Coast—in fact, every plane from anywhere in that time. You might say he was on vigilante at wrong me. You could hardly blame the guy. After all, who should I be arriving on a coach from Burbank when I was coming from New York? A good question, I thought.

As you see, I was really on a rant about Columbia's misrepresentation and disregard. I had no intention of using my return ticket, even if I had to walk back to New York.

However . . .

I sat down in my hotel room in San Francisco a few mornings later to write out a check to TWA for my return trip from Los Angeles. I looked at my Columbia return ticket. $77.65. Started to write out a check for $120-odd to TWA. Then I asked myself if I was really $50-worth furious at Columbia for an 8-hour delay.

I decided to go shopping at Gump's instead. I also went to Columbia and made my reservation for the return flight from LA. I was wary, though, and made it for a Friday night flight, allowing leeway for any "unscheduled" delays. I could still be back at work on Monday.

If you're stuck with my story this far, I wound up my vacation with friends in Arcadia, and on Friday afternoon checked Columbia Airways in on my flight for that night. Yes, I was scheduled to leave at 9:30 p.m. from Burbank's Lockheed Airport. My hostess drove me there in good time. Feel that I was, I wived her with off at the terminal doorstep, and was told at the World Wide counter that my flight was canceled—engine trouble—until Saturday night.

If you know LA at all, you know that you might as well be stranded on an island in the middle of nowhere as to be left at one of its eminently without a car. I think my jaw must have fallen six inches. A voice from behind the counter finally found that I'd just come from Arcadia. I didn't know that World Wide was staffed with guardian angels, but they turned out to be reasonable facsimiles. This man's brother-in-law of the counter lived in Arcadia, was at that very moment having dinner with his wife at the terminal, and she would be glad to drive me back to Arcadia with her. We got along fine, Mrs. Vilseck and I, and she took me back to the hostess who had only a few hours before urged me to come back next Outer soon.

By Saturday I was cynical. I delayed checking my flight until the last possible minute. When I did call, I got Mr. Vilseck, who remembered my name and assured me that although WW wasn't going to be able to get everyone out that night, he would see that I outlined. Friday's fiasco had a bright side, I thought.

Back to Burbank Saturday night. I was there early and taking no chances. (I had been told no later than 8:30.) Well, the plane was going to be delayed. First it was 9:30. Then it was midnight. Then one thing it seems that World Wide wouldn't have a legal eyes until then, not long enough soon between flights.

For another thing, my fellow passengers had stopped then I count the hours on the counter workers' mechanics still bantering with the engines. They took it on for a test run—brought it down, tinkered some more. Another test ride around the field. More tinkering. All of which was reassuring, of course.

Midnight came and still nothing happened. All of the WW personnel had disappeared from the counter. Nothing was set (tentative at 1:00 a.m. Also at 2:00. Finally at 3:00 a.m. (Sunday) we took off in our "Arrow Airways" DC-3. I'd never heard of Arrow myself, but a carpet with upturned edges would have been all right with me by that hour.

We had a full quota of passengers and baggage and hence couldn't carry much gas. This meant a refueling stop every three hours—four stops between Burbank and Chicago. I felt as if I were seeing the country—or at least the airports. Prescott, Tucumcari, Wichita, Kansas City, Chicago.

As a matter of fact, the trip was rather gay. The group was young, and the 3-man crew spelled each other, with the third man playing steward. The crew didn't seem sure from one stop to the other what the next would be, but by this time the uncertainty of the whole thing was getting to be something of a lark. No one was trying to give us the impression (not that they could have) that this was a smoothly organized operation, and this time I don't think anyone cared. The short hops, the uncertain stops, the good-natured crew's comment, "We don't make much money, but we have a lot of fun," all got to be a big, friendly joke.

It was even funny when they dumped us, finally, at Newark, of all places, at 1:30 a.m. Monday. It was nearly 3:00 before I landed in my Manhattan apartment.

I didn't mind, though. Only thing I minded was the feeling of being duped by the glib, promise-on-anything advertising.

When people ask me now whether I'd do it again, my answer is that I have no mental reservations whatever about safety or comfort, so far as I can see the planes I traveled were perfectly okay on those scores. But a unscheduled plane is unscheduled, despite claims to the contrary. If I can spare time and not money, I certainly would do it again.

Georgia Macris
410 W. 24th St.
New York, N. Y.

Hot Rods & Thrills

Thanks to your editorial, "Risking Death for Thrills," in your Sept. 4 issue. I have been refusing to move an ahem for several years because I feel that they hinder the development of aviation.

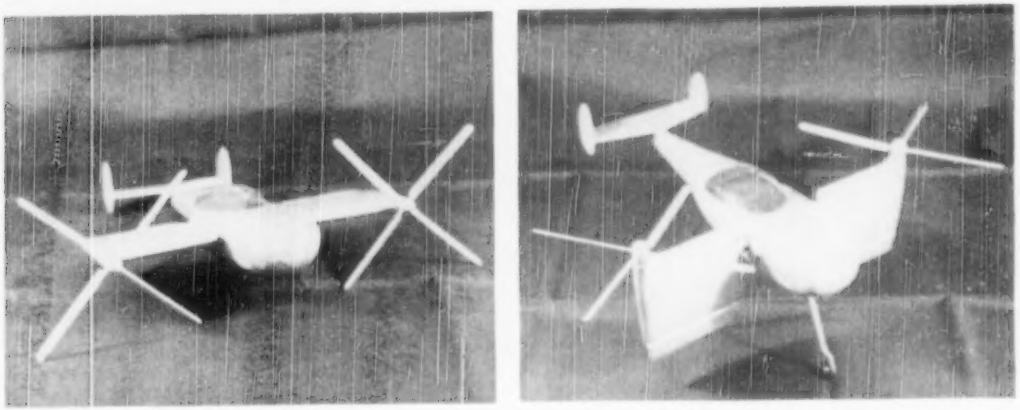
For 40 years we have been trying to sell glamor and thrills to that part of the public made up of soda jerkers who have an inferiority complex and, therefore, an urge to fly and no money.

Let's grow up and start selling air transportation to half a million traveling men who need it in their business and who can afford it. The type of people who could use an airplane as a work horse just are not interested in thrills. They drive Buicks, not hot rods.

The only part of private aviation that is sound today is that part that is catering to business people in a businesslike way. Only in that way can the industry grow, as it's cut out the circuses.

The Wright brothers never did use "exhibition" flying.

F. L. Stevenson
Middle West Manager
Associated Aviation Underwriters
175 West Jackson Boulevard
Chicago 4, Ill.



One design for convertaplane competition is shown in this Convertawings, Inc. model with small, high-speed rotors on tilting wing

USAF Asks Convertaplane Action

New interest in fixed wing-copter configuration spurs design efforts of small engineering groups

Efforts of convertaplane proponents to stimulate action of the military in sponsoring the development of a suitable combination fixed-wing and copter configuration finally has borne fruit.

Latest reports indicate that specifications will be published any day.

While these Army-Air Force performance requirements for the convertaplane undoubtedly will be high, chances are that they will constitute a target level and substantially lower compliance would be acceptable for what may be considered, as yet, a relatively untried configuration.

One reason for the delay in sponsoring convertaplane development is that the military may have been beating the bush to flush out unpublicized designs in order to find one or more configurations with sufficient merit to warrant development at government expense.

Another may be that many of the contestants—individuals or small design groups—required security clearance, sometimes a lengthy procedure.

▶ **Small Group Role**—Because the convertaplane project probably will mean pure prototype development involving new design concepts, little groups undoubtedly will be attracted because they feel that extensive "cut-and-try" procedure will be involved and that from the standpoint of economy and necessity for quick decisions, they would be able to cope with the situation.

Evidence that offerings of small companies will be a factor in the Army-Air Force convertaplane competition is a design on the drawing boards of Convertawings, Inc., 747 Madison Avenue, New York City. This small engineering group is headed by David Kaplan, former project engineer with Doman Helicopters, Inc., Danbury, Conn.

▶ **Configurations Planned**—Aim of Convertawings is to develop a transport type convertaplane accommodating 14-20 passengers, powered by Allison T-38's. But immediate efforts are on a small, two-passenger prototype design to prove out a unique configuration and control system.

Preliminary estimates for the prototype performance calls for the use of two Boeing 502 gas turbines, to give an airplane top speed of 260 mph.

▶ **Rotor-Props**—Major emphasis of the company's engineering work is on development of small-diameter, high-speed rotors which will have good propeller efficiency.

Thus, the prototype will be designed to use the same rotors for hovering and forward propulsion.

▶ **Makeup**—The design embodies a somewhat conventional fuselage with wide stub wings.

The Boeing 502's would be located in the fuselage nose in a parallel arrangement.

The rotor assemblies are carried fixed on the wing tips and are driven by a common jackshaft, employing the technique for single-engine operation throughout the flight regime. The jackshaft passes through the center of the wing axle for connection to the right-angle drive to the rotors.

▶ **Wing Tilts**—Conversion will be accomplished by tilting of the wing and rotor assembly as an integral combination. This would permit the fuselage to remain horizontal affording both improved pilot visibility and passenger comfort.

Takeoff and landing would be as a helicopter and slow forward flight would be accomplished by distributing the lift between the rotor and the wing. Positioning of the wing is accomplished aerodynamically to distribute the lift in accordance with forward speed.

Running takeoffs and landings could be made to increase range, and a forced landing would be possible as a glading airplane in the event of failure of the rotor system or transmission.

In the airplane configuration, the design is expected to give a machine with potentially high maneuverability, since it is intended to be capable of snap rolls and inverted flight.

▶ **Improvements**—Large economies in powerplant weight are expected by the use of the gas turbine installations. Reduction in transmission weight also is expected because with the gas turbines the vibration loading will be minimized and surge effects, associated with piston powerplants, could be eliminated.

The tricycle landing gear will be retractable and necessarily have sufficient length for rotor ground clearance in airplane takeoff.

Prestwick Pioneer for Utility

New Scottish plane, soon to go into production, takes off in 240 ft. and has exceptional slow-speed control.

(*McGraw-Hill World News*)

London—The first aircraft to be designed in Scotland and to go into production there is the Prestwick Pioneer, the product of Scottish Aviation Ltd., Prestwick Airport, Ayrshire.

The prototype was designed originally more than two years ago as a three-seater for military use in spotting artillery fire and for liaison and communications work.

The remodeled version, aimed at the commercial market and especially for operation out of small landing fields and off unprepared runway surfaces, has been given a more powerful engine—the Alvis Leonides 520-hp. radial air-cooled piston engine—and now is capable of carrying five persons. Conversion into an ambulance or a crop-spraying or fertilizer-spreading aircraft is also contemplated as a possibility by the designers. Floats instead of wheels can be fitted as an alternative.

The first of the new version made its initial flight late in June this year and is now undergoing extensive flight trials prior to certification. Production at Prestwick is definitely counted on as soon as the Certificate of Airworthiness has been granted.

▶ **Slow Flyer**—The new Pioneer, like its predecessor, is an all-metal, high-wing, strut-braced monoplane, marked by exceptionally good slow-flying characteristics, due to the full-span leading edge slats and 57½-percent Fowler flaps and split flaps on the trailing edge—all hydraulically operated.

The Pioneer will take off fully loaded inside 80 yards, and land in 60 yards. For takeoff, the leading-edge slat is open, and Fowler flap setting is 20 deg.; for landing, the Fowler flaps lower to 30 deg.

Capable of top speed of 162 mph. at its full-load weight of 5400 lb. at an altitude of 4350 ft., the Pioneer is really designed to cruise at slower speeds; its range at 120 mph. is 400 mi. at 5000 ft. Service ceiling is 25,000 ft.

▶ **Other Specifications**—Pioneer's span is 52 ft. 6 in.; constant chord wing is of NACA section 4415, two-spar stressed-skin construction. Dihedral angle is 1 deg.; incidence 4 deg. Wings are joined to center-section at each spar root and braced to fuselage by single strut on each side. Fowler flap and slat run in tracks of extruded I section light alloy and are operated by a system of cables from single jack located in port wing. Ailerons are of metal construction with fabric covering. Flaps and slats are interchangeable, port and starboard. Gross wing area is 390 sq. ft. Fowler flap area is 67.2 sq. ft.

Length is 34 ft. 7 in. Alclad stressed-skin fuselage construction is of basically oval cross-section. The rear portion of the fuselage can be detached at a point just forward of the leading edge of the fin for ease in transportation. All-round visibility is now provided in the new version by means of curved Perspex glazing of rear of cabin enclosure.

Height with thrust line horizontal is 13 ft. 7 in. Cantilever tail-unit is of monoplane type. Construction of tailplane and fin is similar to that of wing. Rudder and elevators are metal with fabric covering, port and starboard elevators being interchangeable. The tailplane is electrically actuated, its incidence being adjustable in flight over a range from plus 4 to minus 5 deg.

• **Landing Gear**: Split type with oleo-pneumatic shock-absorber struts. Brakes are hydraulically operated, pressure being supplied from the main aircraft supply. Track is 9 ft. 8 in.

• **Power Plant**: One 520 bhp. Alvis Leonides LE. 4M radial air-cooled engine, supplied as a complete power-plant unit with all auxiliaries, hot and cold air intakes, air filter, oil cooler and oil tank. Rotol or de Havilland three-blade constant-speed propeller.

• **Accommodation**: Enclosed cabin seating five, in a one-two-two arrangement, with the pilot's seat located on the center line. The back of the pilot's seat hinges rearward to facilitate entry and exit. Seats and harness are stressed to withstand a deceleration of 25 G. All seats are readily removable and the cabin can be arranged to carry one stretcher and attendant.

• **Weights and Loadings**: Weight empty, 3835 lb.; removable load, 120 lb.; disposable load, 1280 lb.; weight loaded, 5400 lb.; wing loading at take-off, 13.15 lb./ft.²; power loading at take-off, 10.38 lb./hp.

▶ **Charter Service**—Scottish Aviation was formed in 1935 to develop local air services in Scotland. Although these were taken over when British European Airways was given the monopoly of internal services, Scottish Aviation still operates an extensive charter-flight service with three Dakotas.

The firm has a 40-percent interest in Hellenic Airways, which runs a twice-a-week service from London to Paris, Rome, and Athens, with connections to Cairo, and a network of internal services within the Greek islands, Cyprus, Crete, and a link to Alexandria.

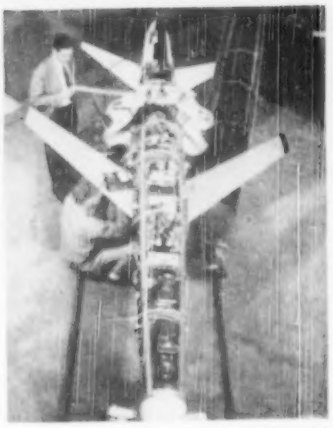
The same group which formed Scottish Aviation was responsible for establishing Prestwick Airport, an important terminal point and departure point for trans-atlantic travel, both during the war and since. In addition, the Prestwick factory is a recognized conversion center for Douglas DC-3s and since the war has carried out conversions of a large number of the wartime C-47 aircraft into civil planes. A number of BEA's Dakotas are being modified into larger-capacity planes at Prestwick.

▶ **Forced Draft**—But all is not smooth air in this firm's outlook. Only recently the British Government moved to acquire Prestwick by compulsory purchase, against the protests of Scottish Aviation. The draft purchase order was issued in January, 1950, by the Ministry of Civil Aviation. When objections were voiced, public hearings were held in Ayr in last April.

Scottish Aviation was the sole objector then remaining and made strong representations to the MCA's commissioner. But just recently, after reviewing the case, the Minister of Civil Aviation, Lord Pakenham, has decided to go ahead with the acquisition, stating the airport was "almost wholly developed . . . at State expense."

However, the Ministry has agreed to grant Scottish Aviation Ltd. a 99-year lease of its factory buildings at Prestwick, and negotiations as to the terms are now in progress.

NACA's Northop RF-61 totes free-fall body with test wing for drop from 35,000 ft.



Closeup of equipment-packed body with brake seen partly open behind experimental wing.

Brake Aids Free-Fall Salvage

Sturdy "umbrella" faired into body contour opens at predetermined point for slowup, chute finishing job

A new scheme for salvaging intact free-falling bodies and its related equipment used in high-speed aerodynamic studies, promises to pare research costs considerably.

The free-falling body technique is not new in itself. Development of high-speed research using this procedure was begun at the National Advisory Committee for Aeronautics' Langley laboratory in 1944, as one of several methods for gathering more complete aerodynamic data in the transonic regime, when experimental wind tunnels exhibited choking phenomena.

▶**Useful, But Costly**—The procedure has been used for checking airfoils or propulsion systems at all three of NACA's major research centers: Langley, Lewis, and Ames.

Lockheed Aircraft Corp. also has used the method in connection with its XF-90 penetration fighter development, getting in this way approximately half the information normally obtained by risky, high-speed dive trials.

Disadvantage of the method was the one-shot feature, resulting in destruction of the model.

▶**Brake Plus Chute**—But now Ames Lab's flight engineering section has come up with a refinement to boost the practicability of the gravity-propelled model technique.

It is a dive brake and self-contained parachute system which increases the possibility of models and instruments being recovered undamaged upon hitting the ground after a drop from an airplane at altitudes from 35,000-40,000 ft.

Already, successful recovery has been reported in a number of drop tests over the California desert.

▶**Test Vehicle**—Ames' current studies are with a bomb-shaped body weighing over 1000 lb., carrying test wing, control surface and empennage models. Dropped from altitude, the body covers a wide range of speed leading to greater than sonic values.

Ground station technicians gather data on the velocity of the fall via radar and optical tracking.

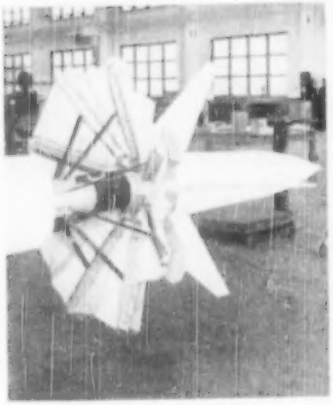
The drag and lift forces acting on the body and test wing, control surface or tail are recorded by equipment within the body.

▶**Brake Makeup**—At a predetermined point above the speed of sound the dive brakes, located near the rear of the body, begin to open. This slowup assembly has the form of a rugged "umbrella" with sturdy metal ribs bolted to the fabric.

The metal ribs are securely braced to the body by sliding, flat rods. External components behind the ribs for the installation into the body when the umbrella is closed.

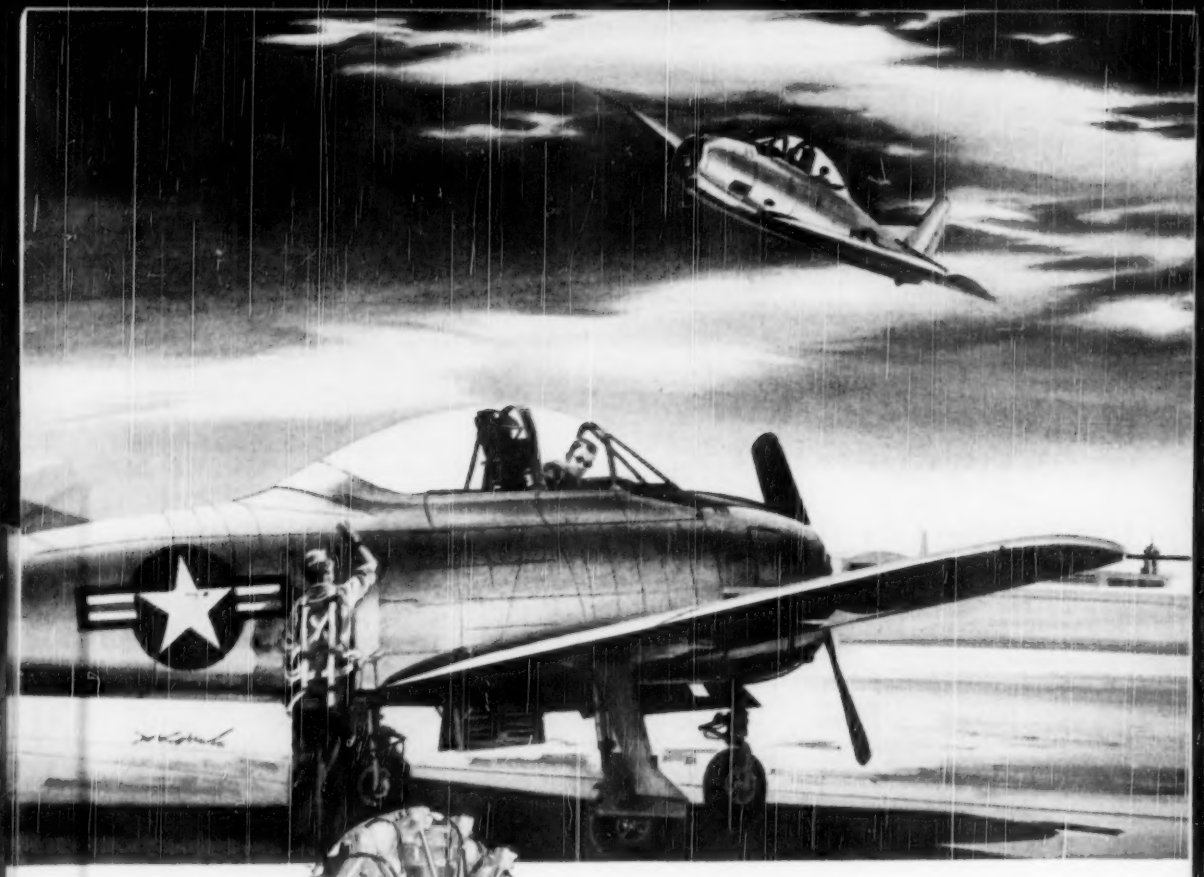
▶**How Slowup Works**—The braking force is controlled to avoid the high loading which normally would be associated with sudden slowup, by use of a fluid metering system limiting the force to a predetermined value.

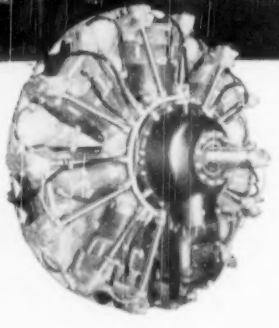
And when the body has been sufficiently slowed, a 76-ft., ribbon-type parachute, stowed in the tail is automatically released to take over the job of easing the body to the ground in a vertical position.



Sturdy brake is rod-braced near body's end.

Successful recovery after seven-mile fall. Parachute lines trail from end of body.





POWER PLANT FOR THE TRAINER—Wright Cyclone 7 . . . with a takeoff rating of 800 h.p. . . . powers the North American T-28 Trainer. Its features include rugged construction and simplicity of design for low cost maintenance and overhaul, low cooling requirements, ease of installation.

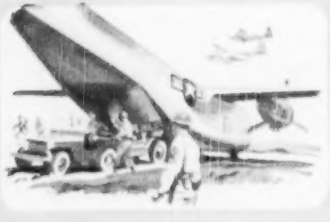
Trainer...

Though differing widely in design and type of service, these aircraft are alike in their need for dependable, economical power. Both get it from the versatile family of Wright Cyclones.

▶ **In the North American T-28** . . . with its speed and range linked to Wright power . . . the U. S. Air Force trainee gets thorough, realistic training in all military aircraft operations.

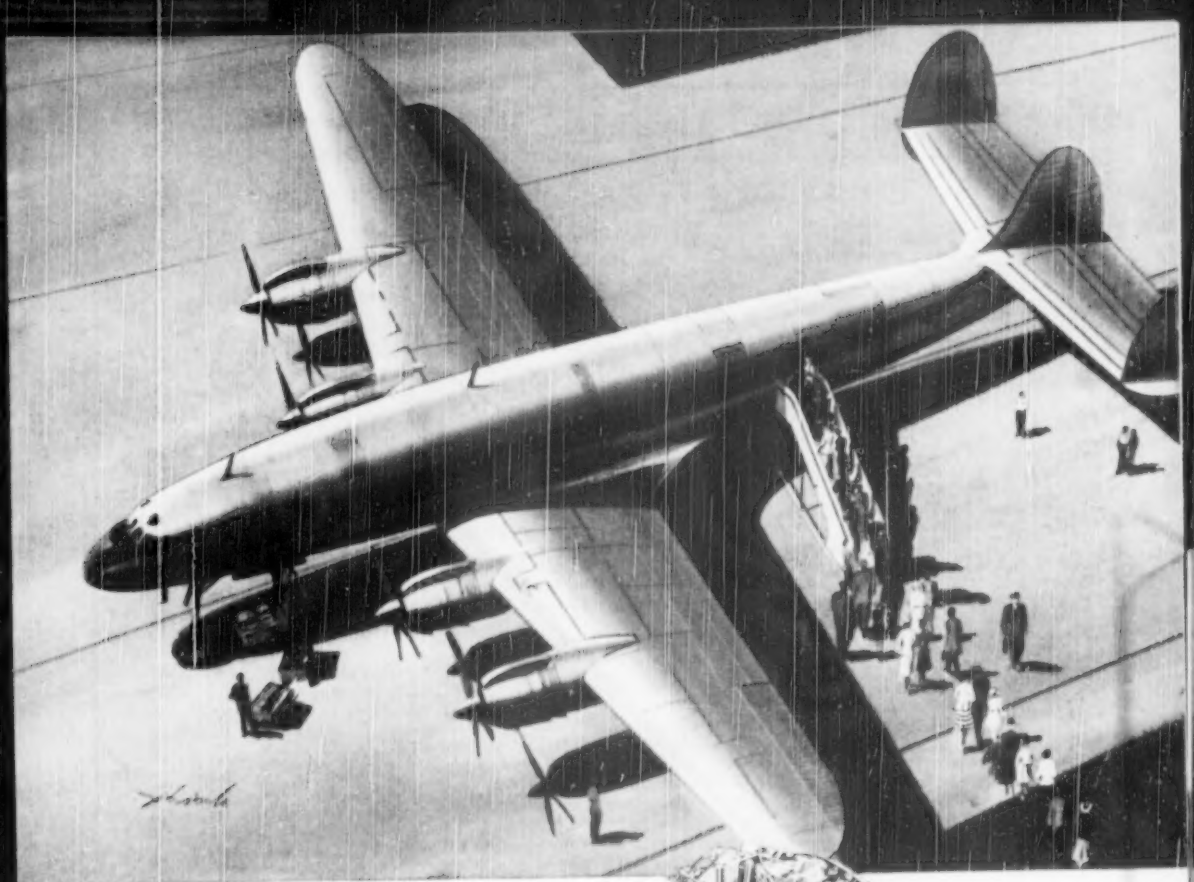
▶ **The Lockheed Constellation** is equipped with every comfort and luxury for air travel enjoyment. It is *safety-proved*, too . . . by over seven billion airline passenger miles flown with dependable, *service-proved* Wright power.

Chase C122 Avitruc

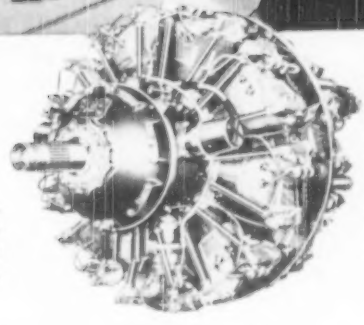


Douglas Skyraider

Lockheed P2V-4 Neptune



R Traveler



POWER PLANT FOR THE TRAVELER — The Wright Cyclone 18BD ... rated at 2500 h.p. for takeoff and service proved on fourteen of the world's leading airlines ... has increased authorized time between overhauls on the Lockheed Constellation from 600 to 1200 hours.

▶ The six aircraft shown below do other important jobs. Each has its own special power needs—and Wright engines power them all. The future will bring new needs, and Wright engineering and production teams are ready to handle them.

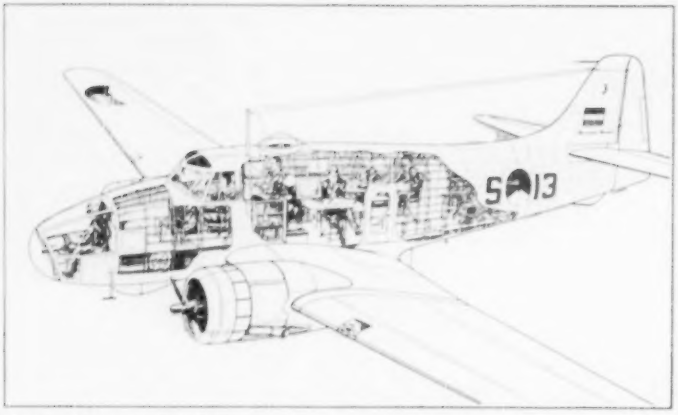
WRIGHT Aeronautical Corporation, Wood-Ridge, N. J.

A DIVISION OF CURTISS-WRIGHT CORPORATION

Northrop C12S Raider

Piasecki H-21 Rescuer

Martin P5M Marlin



"Universal trainer" is Fokker's contribution to meet latest needs for crew orientation.

Fokker Introduces New Trainer

Craft embodies multi-training scheme to accommodate pilots, navigators, radiomen, bombardiers, observers.

Successful completion of flight tests of the Royal Dutch Aircraft Factories (Fokker) S.13 introduces a rugged, compact and versatile craft specially designed for crew training.

This new twin-engine plane comes at a time when training of air personnel again is receiving emphasis, and its well-planned facilities offer a scheme for accommodating pilots, navigators, radio operators, bombardiers and observers.

It is suitable for aerial survey work, liaison and transport functions, and a version with floats (S.13-W) is available for water operations.

Though primarily intended for training of military crews, the craft should be equally adaptable for orienting civil airmen.

The 12,735-lb gross plane will do 220 mph. at 8000 ft., cruise at 196 mph. at 11,800 ft. and land at 69mph.

► **Fuselage**—This is arranged for efficient accommodation of the diversified crew. There are four compartments.

• Bombardier and observer are stationed advantageously in the nose, which is framed by steel tubes and enclosed by six transparent sections for excellent visibility.

A folding table is on the "greenhouse" starboard side, a seat in the center, panel on the port side. Top portion of panel mounts a clock, outside air temperature indicator, altimeter, airspeed indicator and compass. Bottom section carries bomb selector and release switches, bombhatch (doumier) control handle, and camera control box.

On the port side of the nose compartment bulkhead is a large rectangular opening giving access to fuselage.

• Pilot seat on starboard side of cockpit is easily detachable when flying instruction is not to be given. Associated control column and pedals also are quickly removable.

The instrument panel and pedestal carry all the usual installations.

Panel in front of the pilot mounts the landing gear signal lamp; radio compass; clock; altimeter; airspeed, rate-of-climb, direction, and turn indicators; and gyro-compass, autopilot and cockpit illumination controls.

Portion of the panel in front of the trainee pilot carries an altimeter, and airspeed, turn, manifold pressure, autopilot pressure, landing gear emergency pressure and brake pressure indicators.

On the center panel, in front of pedestal, are engine gages, fuel gage, ammeter, outside air temperature indicator, hydraulic pressure gage, and gyro compass. Mounted on the top of the windshield center structure is a compass with face down dial which is mirror reflected.

In all, including pedestal equipment there are about 58 type groupings of instruments, controls, switches, etc.

Two-stage amber screens for blind flying also are provided.

• The uninterrupted cabin area accommodates radioman, navigator, instructor and two seats and tables for trainees.

Navigator's panel carries airspeed indicator, altimeter, master compass, direction finder, outside air temperature indicator and dimmer switches.

There are two emergency exits in the roof, the rear one being fitted with an astrodome.

Cabin entrance door is located over wing trailing edge fillet.

• Rear compartment houses camera equipment, oxygen supplies, additional radio gear and miscellaneous equipment.

► **Surfaces**—Wing is comprised of the conventional center and outer panels.

Ailerons are fabric-covered, with trim tab on right unit. Flaps are split-type.

Stabilizer is a single-piece structure. Elevators are fabric-covered.

Fin is integral with the fuselage structure. Rudder is fabric-covered.

► **Fuel, Oil**—At each side of fuselage, the center section carries three 53-gal. fuel tanks between spars. Installed on firewall are fuel hand-pump, fuel-pressure warning switch and oil-dilution system valve.

S.13—BASIC DATA*

Dimensions	
Span	63 ft.
Length	44 ft. 7 in. (44 ft. 11 in.)
Height	18 ft. (21 ft. 8 in.)
Wing area	495 sq. ft.
Loadings	
Wing loading	25.7 lb./sq. ft. (26.9 lb./sq. ft.)
Power loading	10.6 lb./hp. (11.1 lb./hp.)
Engines (2 P&W S1H1-G)	
Takeoff power	2 x 600 hp.
Normal rated power at 8000 ft.	2 x 550 hp.
Cruising power at 11,800 ft.	2 x 400 hp.
Weights	
Empty, with fixed equipment	9225 lb. (9650 lb.)
Useful load	3510 lb. (3650 lb.)
Total	12,735 lb. (13,300 lb.)
Performance	
Maximum at 8000 ft.	220 mph. (193 mph.)
Cruising at 11,800 ft.	196 mph. (171 mph.)
Landing	69 mph. (70 mph.)
Climb to 3300 ft.	2.9 min. (3.7 min.)
to 13,200 ft.	13.7 min. (19 min.)
Service ceiling	21,300 ft. (18,000 ft.)
Takeoff run on hard surface, 5½ mph. headwind	1000 ft. (29 sec.)
Maximum range	1200 mi. (930 mi.)

*Data for seaplane version (S.13-W) are same except where noted by parentheses.

Three-view of Fokker S.13

The 14½-gal. oil tank on front of firewall has a separate compartment for feathering system oil.

▶ **Engines, Equipment**—Engines are Pratt & Whitney 600-hp. Wasp S1H1-G5.

Propellers are two-blade, full-feathering Hamilton Hydromatics.

Carburetors, Stromberg Type NA-Y9E1.

Magnetos, Scintilla Type SB9R.

Generators, 50 amp., 30v., Bendix Type 1351-1.

Starter, Inco Type JH6F1-3.

Hydraulic pump, Pesco Type 1P-320-MA.

Fuel pumps, Pesco Type 2P-R400-BRD.

Vacuum pump, Plesscy Type B3X Mark V.

Tachometer generator, Kollman Type 565G-01.

Jet Starting Scheme

A. V. Roe Canada Ltd. is developing a combined igniter-fuel injector for improved starting in combustion systems such as in their Orenda turbojet.

These cans incorporate supply jets feeding fuel to tubes extending into the flame zone to give pre-combustion vaporization. Reverse-turn ends on the tubes eject the vaporized fuel upstream to the stable flow area for efficient mixing with air.

The new system, designed by F. D. M. Williams, has an igniter and auxiliary injection jet carried centrally in the baffle supporting the vaporizer tubes. A flame from the auxiliary jet gives "lighting up" and also heats the tube for vaporization before normal combustion and self-vaporization has started.

Once started, the process is self-sustaining and the igniter-auxiliary jet is turned off.

ENGINEERING FORUM

Transports Used to be Better . . .

There is a letter on page 40 of your July 24 issue . . . I refer to Arthur J. Drogt expressing himself all in favor of combustion heaters, contrary to someone else having preference for obtaining heat from the engine exhausts. And why not use the exhausts? The heat is there, for free, after allowing that gas has to be burned in order to fly, so why not use it instead of having the additional equipment to burn more gas? Consider, too, that this burning of more gas is done inside the airplane with so much more potential for trouble. And there has been such trouble.

I realize that friend Drogt has to work to live, references his business connection with combustion heaters, but so much has come to be included in modern airplanes it becomes a matter of living to work?

Point is, I'm in favor of leaving out whatever does not have to be included and having what must be included good. As Bill Stout once said, "simplicate and add more lightness," the objective being more capacity for miles and least maintenance man-hours/flying hour. Why not?

And so on. Well, I've indulged in mental exercise as per the following. (Perhaps I should explain I'm not a newcomer to aviation. I started in 1924 when I joined the Royal Australian Air Force. And I've been in the commercial field since 1928, with no break. I'm 46, but otherwise not that old!)

▶ **Do the modern transport airplanes indicate real progress?**—Insofar as those features which can be made known to the general public, such as higher speeds, ability to fly above the weather, the answer must be yes.

Insofar as those features which cannot be advertised, the number and extents of mechanical difficulties which cause delayed departures and cancelled flights, with increased costs in consequence, the answer regrettably must be no.

Consider records, covering a 12-week period picked at random, showing 1.51 per cent of DC-3 flights delayed for reasons of mechanical trouble, as compared with 7.01 percent applying to the most modern twin-engine ships. Does this indicate progress?

Perhaps it is over-simplification that let's consider the detail before judging? Let's go back, for example, to 1937.

In that year the airline I was with became the proud possessors of a small fleet of Lockheed Electras. These ships had been selected simply because they were American planes, new and performance notable. We were confident they would be good. They were.

The basic idea was to take delivery and go to work with as thereafter but that there would stay at work, quite without the additional cost of unexpected troubles, modifications and lost flying time due to defects arising in service.

It is nothing but true that our original expectations of a very high order of satisfaction were quite confirmed by experience extending over nine years, during which individual ship time passed 25,000 hours.

I feel very sure, from memory, that Lockheed never did issue to an instruction to make a change, while the only structural problem we had to handle consisted of beefing-up a joint in the center of each flap rib and fitting a doubler to the center-section spar, where cracks developed after around 14,000 flying hours, as a result of some flexing at this point during landing gear actuation.

There was one other such item we experienced cracking of steel tube members in the landing gear folding strut assembly. We simply had to replace the original tubes, adding an additional tube fitted inside the strut end fittings, so this wouldn't happen again. It didn't, and the change was very easy. The only other trouble worth mentioning is that we couldn't count on long service time regularly from the voltage control boxes, but these were very easily changed and serviced.

So service difficulties with Lockheed Electras don't add up to any tale of woe and this even quite enough time to be properly informative.

Now the point is that no such report can be turned in to describe service experience with the latest airplanes, not including the DC-4. Any attempt to do so would amount to kindling the truth very subtly indeed.

The basic airplane structure today is not open to a lot of criticism (fortunately) but it isn't up to the standard of former years either, with some noticeable differences between the several manufacturers concerned. For a quick description on basic structure shortcomings today, I'll set the evidence in that engineering scout astray originally in their endeavors to keep weight down. So weight originally left off goes on later, pro-rated down in proportion, contradicting original sales publicity.

However, while basic structure today, generally speaking, carries only a slight odor of offense, accessory equipment smells to high heaven, likewise engines which have become notable since 1945. Likewise the latest propellers. There is, of course, some variation in the amount of smell from individual item but, as witness airline troubles and our records, smell there surely is!

Let's consider what airlines have to deal with today. Some examples:

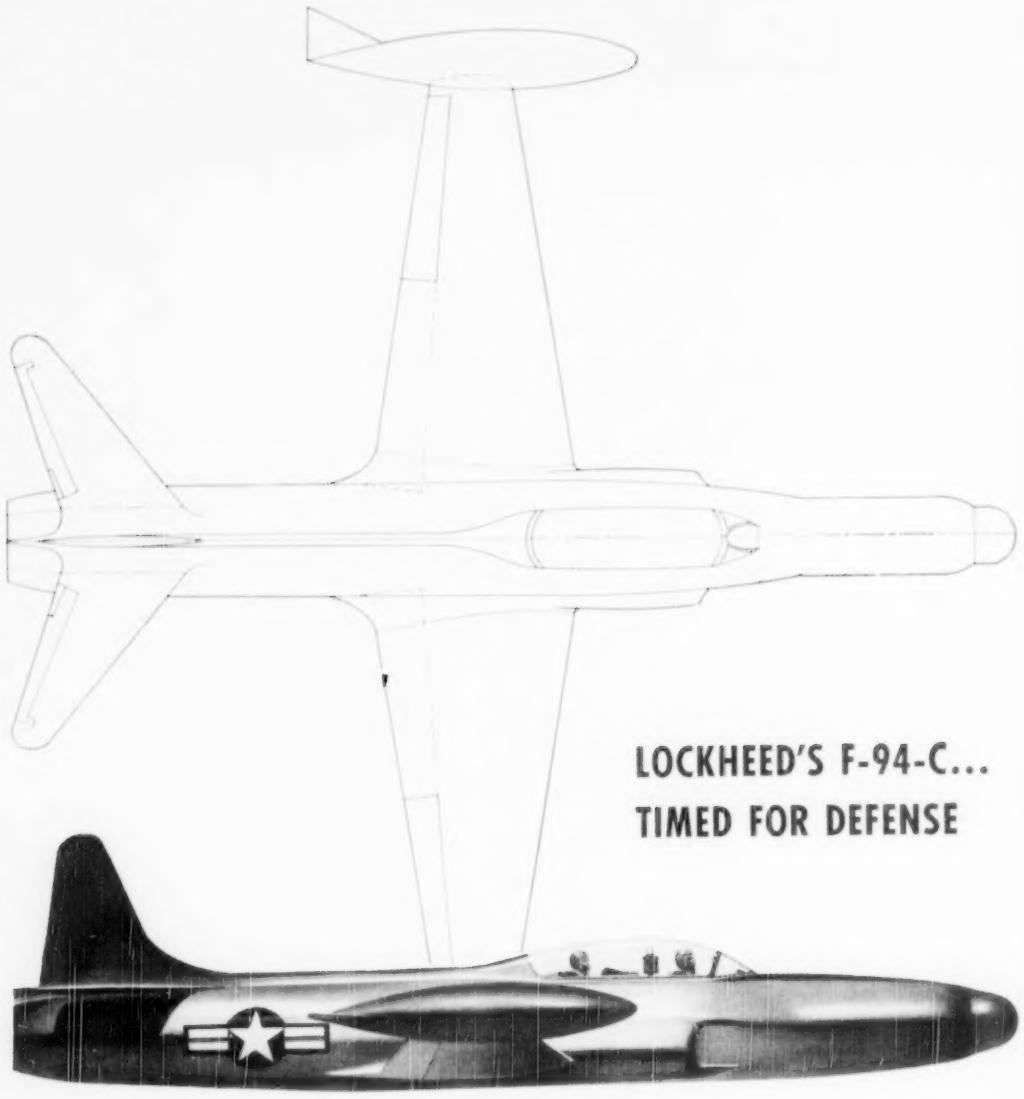
▶ **Powerplants**—Returning to an engine which has become widely used since 1945:

● **Crankcases**. We don't get up to 20,000 hours out of these any more and why should the passing of time, with continued attention to development, bring retrogression?

● **Propeller shafts**. As above, experience showing to look for defects calling for replacement of this part at around 3000 hours and. Those parts aren't cheap, either!

● **Crankshafts**. Same as for propeller shafts.

● **Cylinders**. These don't remain in service any more until scrap because the base has worn beyond limits. . . . Rice seen has become the least problem with cylinders. One



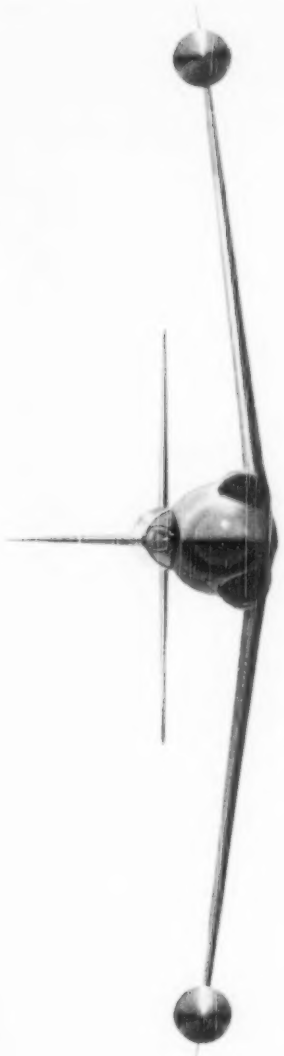
LOCKHEED'S F-94-C... TIMED FOR DEFENSE

LIKE MANY ANOTHER U. S. weapon for defense these days, the Air Force's new Lockheed jet fighter, the F-94-C, is too good to be talked about. You'll know this plane by the thrust of its speed, the sound of its power, and its purple-blue exhaust as it streaks through the night or through the roughest weather.

But beyond this physical impact of the new F-94-C, thin-wing jet, there is not much you can know about the airplane. It has none of everything—versatility, maneuverability, stability, etc. —but it's as good it's correct.

IT TOOK MORE TIME, more skill and more ingenuity to build the F-94-C than its distant World War II cousins. Good as they were, World War II airplanes were not the complicated packages of speed, electronic intelligence and firepower found in the F-94-C. Nor did they require the years and years spent in the development of men, machines and materials now needed to build an airplane for defense.

It takes more and more time and planning to build an airplane, and the F-94-C was timed years ago—by Air Force and Lockheed engineers—for today's defense.



LOOK TO LOCKHEED
FOR LEADERSHIP IN JETS

LOCKHEED

AIRCRAFT CORP., BURBANK, CALIF.

Cable Matches Expansion of Aluminum

A steel aircraft control cable which expands and contracts at approximately the same rate as aluminum has been put on the market by American Steel & Wire Co., Cleveland.

"Hyco-Span," the new cable, is the result of nine years of intensive research by the manufacturer. Hyco-Span's coefficient of expansion is about 80 percent that of 24ST aluminum (see figure 1).

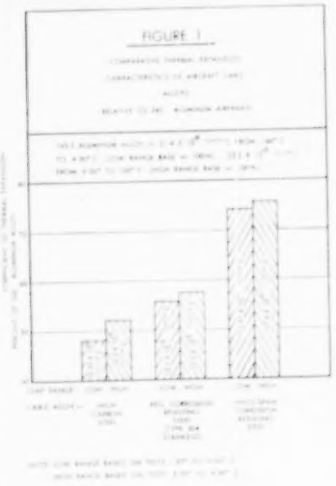
Development of a control cable whose tension will not change appreciably in spite of violent temperature variations is particularly important in high-flying aircraft flying at speeds flirting with the sonic. Temperature drops of 150 F. in a matter of minutes, no longer uncommon, result in rapid shrinkage of aluminum fuselages and wings. Should the control cables slacken at speeds of 5,600 mph., a fatal flutter might develop in the control surfaces.

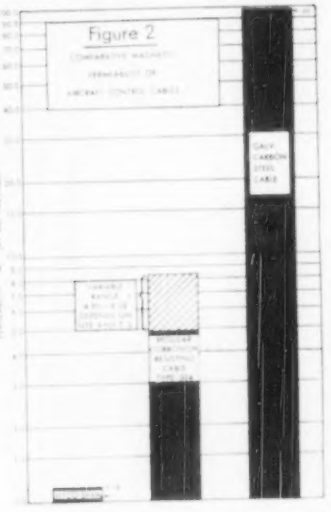
Currently used automatic cable tension compensating devices do a good job of keeping tension constant; but they cost money, the many units used in large planes cost weight, and they have to be maintained.

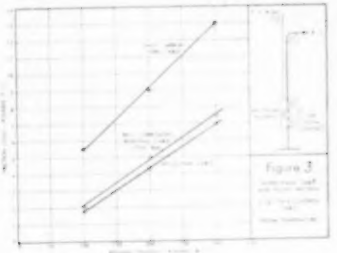
Other important advantages claimed for Hyco-Span by the subsidiary of United States Steel:

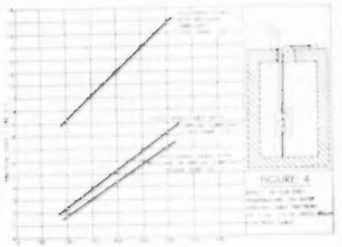
- **Non-magnetic properties** (see figure 2). This feature is of consequence when cable runs come close to compasses in aircraft. Furthermore, the cable has no tendency to change from austenitic to ferritic steel under normal control loads.
- **Corrosion resistance.** Hyco-Span's resistance to corrosion is equal to that of stainless steel.
- **Simplified rigging** and more positive control. This is due to the cable's ability to expand and contract with the airframe. This property gives Hyco-Span a 50 percent advantage over carbon steel and a 33 percent advantage over stainless.

The tensile strength of Hyco-Span is slightly less than that of carbon or stainless steels. The difference in breaking strength varies with the size of the cable. H. F. Powders of American Steel & Wire told AVIATION WEEK that a 10-15 percent reduction in breaking strength would be a fair average difference. It might be necessary on some 7x19 cable applications to use the next coarser size, he continued, but the safety factor considered in MIL-C-5424 is so high that he does not consider this diminution of strength of particular consequence.









Interstrand friction of stainless steel cable is inherently less than that of galvanized cable. Hyco-Span, being in the stainless family, exhibits this advantage, and even exceeds regular stainless to the point where its interstrand friction is about half that of galvanized cable (at room temperatures and under identical rigging loads). See fig. 3.

Since Hyco-Span was especially developed to be used under wide temperature variations, American Steel & Wire attempted to find a lubricant which would retain its lubricity under temperature extremes, particularly at the low end of the scale. The company found that many lubricants regularly used on aircraft cable suffered wide viscosity variations as temperatures changed and some actually became brittle at −60F.

A special new lubricant was found which allowed an increase in cable friction of only 20-30 percent when the temperature went from 70 F. to −67 F. For the same change, regular lubricant exhibited a friction increase of 200-400 percent. (See fig. 4). The special lubricant loses none of its effectiveness at room temperatures.

The company states that the USAF at Wright Field has evaluated the cable and concurs almost entirely with its own analysis of the product's characteristics. The report covering the military evaluation is titled "Hyco-Span, a High Expansion Aircraft Control Cable." Number is MCREXA-45324-307 and it is dated Feb. 17, 1950. The company added that the Navy's Bureau of Aeronautics is currently evaluating the cable but CAA approval has not yet been obtained.

Current price quotations for Hyco-Span are the same as those for conventional stainless steel cable and the weight is also the same—a big point when, as Powders said, there is a mile and one half of control cable in a B-36.

Variables Affecting Plug Fouling

Variable	Change	Percent of increase in fouling frequency
Takeoffs/100 hr.	50 to 150	200
Cruise carb. air temp (F.)	≥65 to <50	78
Lead content in fuel	3 to 4 ml/gal	67
"A" plug to "B" plug		
Cruise fuel/air ratio	>0.068 to <0.065	57

Note: All figures apply to radial engines

Spark Plug Competition Keen

Opinion divided on merits of mass vs. fine wire type electrodes; oil firms participate in research.

Competition in sparkplug manufacture finds each of two major companies experimenting with or actually producing each other's specialized type of plug.

The makers are Champion Spark Plug Co. of Toledo and BG of New York. Champion has been identified primarily with the building of mass-electrode plugs. BG has stressed the use of fine wire electrodes.

Now Champion is developing a fine wire plug. R. K. Christie, director of research, disclosed this at the ignition conference recently sponsored by the company at Toledo (AVIATION WEEK Sept. 18).

BG, on the other hand, is producing an expendable mass-electrode plug (AVIATION WEEK Sept. 4).

▶ **Preparing for Market**—A questioner at the conference asked Christie why his firm, leading proponent of the massive electrode, should so suddenly change tack. Christie replied that if the fine wire design offers certain economies and improvements in performance and operation, Champion wants to be prepared to market such a plug.

BG is making its heavy-electrode 761S to keep up with competition. Evaluation tests probably will be finished this year, according to BG engineers.

Merits of the two types of electrodes have provided meat for discussion at many an ignition conference.

▶ **Earlier Discussion**—In England earlier this year, the subject came up at the Lodge Plugs European ignition conference (AVIATION WEEK June 19). One of the speakers at Toledo cited those discussions. R. W. Farren, Trans-Canada Air Line's engineer, said that TCA tests had not substantiated positive statements made at London about advantages of fine wire electrode plugs in firing lean mixtures and easing cold starting.

But a USAF spokesman said military Arctic region tests had shown that mass electrode plugs did give trouble which fine wire electrode plugs alleviated. Therefore, he said, the latter are specified for Arctic operation under certain conditions. Plug troubles on the B-36 have led the USAF to set up a test program to evaluate the two plug types for R-4360 installation.

▶ **Other Phases**—Here are some of the other phases of the discussions at the Toledo meeting:

• **Pre-ignition**—Champion engineers said that that copper melting out of the center electrode of an R57S-1 plug is not a pre-ignition cause. The remaining nickel core temperature will not reach that of the surrounding insulation core, and such a rise is the most likely pre-ignition source.

• **Gaps**. Pan American Airways found that installation of plugs with gaps ranging from .011 to .013 in. caused some unscheduled removals during early plug life. A. W. Kuhn, PAA power plant engineer, said setting of the gap at .013 to .016 in. when a plug was installed noticeably decreased necessity for its premature removal and had no effect on electrode erosion rate.

R. L. Anderson of Chicago & Southern Air Lines confirmed this and commented that 50 to 90 percent of plug removals before 100 hours of operation resulted from use of the narrower gap. He added that wider gaps also aided engine idling materially. Mass electrode plugs, Anderson said, were particular offenders, and engines would hardly idle at all when .012 in. gaps were used. He speculated that fine particles in the combustion chamber might become lodged in such narrow gaps and short the plugs.

• **Moisture**. Pratt & Whitney's I. D. Frazee described tests made on a company plane with newly developed elbow grommets, designed to keep water out of plug barrels. During 350 hours of flight, no trouble occurred with left engine (R-1830) plugs, which had the grommets. Five plugs were removed from the right powerplant, which did not have them.

TCA's Farren, who had recalled the concern expressed at the European conference over moisture condensation in ignition systems, agreed that the grommets did a good job when new. But he said they deteriorated with age and called for improvement of materials used in their manufacture.

• **Analyzers**. Lt. H. F. Reese, USAF project engineer from Caswell AFB, expressed satisfaction with the operation of more than 40 ignition analyzers in B-36 and B-50 aircraft. Flight engineers, he said, would be "lost without them."

• **Carburetor Heat**. Engineers agreed that constant carburetor heat was desirable. Chicago & Southern found that it reduced combustion chamber lead deposits, but warned of difficulties in training flight crews to apply it judiciously. Moreover, metering characteristics of many air scoops and heater valves do not lend themselves to this type of regulation, the speaker said, and should be carefully investigated before any constant carburetor heat procedures are initiated.

▶ **Oil Companies Help**—Representatives of the Texas and Shell Oil companies told the conference how their laboratories are working hand in hand with engine and ignition system manufacturers and the airlines to solve ignition problems.

G. R. Furman, Texas Co. mechanical engineer (speaking on "Analytical Techniques and Apparatus Applicable to Examination of Combustion Chamber Deposits"), described tests to detect, through color, one part in a million of a given metal in combustion chamber deposits. Another method used in Texas' labs is the X-ray diffraction technique, which analyzes the various compounds in these deposits.

Advantages of the latter method are that small amounts (3-4 mg.) of deposit can be analyzed and the deposit not destroyed. Disadvantage is that percentage of compounds is not revealed.

▶ **Fouling Study**—Shell's research engineer, V. E. Yost, presented a study correlating various engine operating conditions with plug fouling tendencies.

Yost observed that large displacement engines are more prone to foul plugs than smaller powerplants (possibly due to the higher lead content of fuel used in big engines), and presented the statistics shown in the accompanying table, based on airline figures given out at the 1949 Champion meeting.

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NEW AVIATION PRODUCTS

Plastic for Cabins

Scratches, smudges and scuff marks on painted surfaces in aircraft interiors soon wear off that fresh, new look, make cleaning harder and raise maintenance costs.

To overcome this airline headache, engineers of the United States Rubber Co. have developed "Naugahyde," a tough plastic covering for walls and other surfaces inside the plane. This vinyl material has a smooth, fine-textured grain that is highly resistant to abrasion, scuffing and gouging. It doesn't chip or become brittle, retains its color and texture and can be washed with soap and water, says the firm.

Naugahyde has a special backing which gives it stability in hanging. The product can be applied with conventional adhesives on most hard surfaces. It already has been given a service workout in buses; a large bus manufacturer is using it for head lining, side-wall panels and luggage-rack covering. The new material is sold in 12 colors in 50-yard rolls, 50 in. wide. Special textures and colors are available on a custom basis. Address: Rockefeller Center, New York 20.

Silicone for Jets

Gaskets, sleeves, washers and many other parts made of new Silicone 161 rubber compound now can be furnished by Stalwart Rubber Co.

The firm points out that this material capable of withstanding extremes of temperature, is particularly suited for use in jet aircraft. It adds that because the new 161 compound can be fabricated more quickly and easily than previously developed silicone rubbers, the costs of production parts has been considerably reduced.

Items made of this material have a tensile strength from 470 to 520 psi., elongation of 110 to 160 percent and a very high specific gravity of 2.1. While dielectric strength is only 170 volts/mil, it retains all other qualities of silicone rubber, offering maximum resistance to extreme temperatures, weathering, chemicals and oils.

Parts will not become brittle and will not crack after long exposure to ozone, ultra-violet rays or atoms, nor will they turn to carbon when subjected to extreme heat, the company says. Address: 179 Northfield Rd., Bedford, O.

Temperature Control

An electronic temperature control panel, intended primarily for controlling window temperature in de-icing and defogging systems, has been developed by Westinghouse.

The 24 lb. device is a vibration-isolated electronic amplifier designed to control temperature within ±5 F. of the nominal setting—adjustable between 90 and 130 F.

The control, Type AVE-105, operates on a signal derived from a resistance bridge, one arm of which is a sensing element. This signal is amplified and controls a relay which in turn operates a line contactor supplying power to the heating system.

Operating current for the unit, 115v. ac., 400-1000 ~, is tapped from the power supply line to the window. The line contactor is actuated by 28v. dc.

The control panel uses one 12AX7 high-mu, twin-triode power amplifier tube and one 12AU7 medium-mu, twin-triode amplifier tube. The dual-air-gap type relay is hermetically sealed to protect contacts from corrosion. A balanced armature provides resistance to vibration.

A fail-safe feature prevents the control from energizing the line relay if failure occurs in the tubes, voltage supply, sensing element or its leads. An internal shock mount suspension isolates vibration in compliance with AF Specification 41065 Method 61. Unit also is designed to meet AN specifications on winterization, salt spray, dielectric and life tests. Address: Westinghouse Electric Corp., Box 2099, Pittsburgh 30.

Compasses Reworked

Military surplus radio compasses are being modified by the Dave Rumph Co. for use by airlines.

Rumph says the Civil Aeronautics Authority has certificated the reworked compasses, type R-5/ARN-7, for scheduled airline operation. The firm adds that this is the first type certificate granted by the CAA on this equipment.

The modified unit reportedly is interchangeable with the Bendix MN-62 compass receiver. CAA has been conducting tests on the revamped compass since early in March, according to the company. Address: P. O. Box 417's, Ft. Worth, Texas.

ALSO ON THE MARKET

Tempilaq pastes in higher temperature ratings, from 1650 to 1950 F., in 50 F. increments, are available. The paste dries when applied to the part to be tested, then melts when rated temperature is reached. The material can be used, for example, to determine how hot jet engine turbine blades get during operation, and are useful for checking temperature of any component which heats up to their melting ranges—especially on parts where it is impossible or difficult to use temperature indicating instruments in tests. Address: Tempil Corp., 132 W. 22 St., New York.

Portable mixer-crystal test set for measuring conversion loss and noise temperature of silicon crystals is designed for use in production testing, incoming inspection and field tests. The instrument, Type 300, has a correlation accuracy of ±.1 db on conversion loss measurements and 3 on noise temperature mean deviation. It is intended for use at or below 10,000 mc. for direct indication and above that for relative indication. Address: Airborne Instruments Laboratory, 160 Old Country Rd., Mineola, N. Y.

Communications recorder for airports logs plane-tower talk on flexible sleeve of magnetic material for an hour. Sleeves are reusable, can be "telescoped" to make a 24-hour recording. Portable or rack-mounted stationary models are available. Address: Audilog Corp., 440 Peralta Ave., San Leandro, Calif.

Jewel bearings and pivots for instruments are being produced again by Duostone Co., which supplied these precision parts during World War II. Products will include bearings of sapphire and glass, pivots of steel and non-magnetic precious metals. Firing pins will be made. Address: Keyport, N. J.

Congressional Roundup

▶ **Armed peace** between the Air Force and Navy since last fall's B-36 investigation almost erupted into open battle in the early days of Korean fighting. The story told by Marine Commandant Clifton Cates to a secret session of the House Armed Services Committee:

The Air Force, abetted by the Army, won a 2-to-1 decision in the Joint Chiefs of Staff against the employment of Marines—even Japan-based Marines in the war. Chief of Naval Operations Adm. Forrest Sherman and Cates, with the go-ahead from Navy Secretary Francis Matthews, wired Gen. Douglas MacArthur to put in a personal request—if he wanted Marines to fight his war. MacArthur did. The play to minimize the Navy's Marine arm lost.

The outcome: JCS agreed to bolster Marine strength from the six battalions and 12 aviation squadrons first programmed for the 1951 fiscal year to two divisions and 18 aviation squadrons. This will require approximately 500 million additional in January. But this didn't satisfy the House Armed Services Committee: it voted to fight for funds for four divisions and 26 air squadrons.

▶ **Deadlocked JCS?**—The USAF-Army squeeze play on the Marines was behind the outburst of congressional demands that the Marine commandant be made the fourth member of the JCS. The Navy feels that even a deadlocked JCS would be better than a USAF-Army dominated JCS. The project will be pushed when Congress comes back in November.

▶ **Who Holds the Button?** Texas' influential Sen. Lyndon Johnson announces he is gunning for two of the four members of the CAB. He names one: Republican Harold Jones, whose opposition to opening the air transport field to feeders—specifically a Texas feeder—irritates the senator. But Johnson won't name the other marked man for "strategic" reasons. "Let's just keep those other three members guessing—maybe it will keep them on their toes, or, I should say, put them on their toes."

▶ **Army Air.** The Army has $42 million plus to spend on liaison aircraft this year. Before Korea, the army wanted only $2 million for planes.

▶ **British Jets.** British manufacturers will get the bulk of production orders for tactical jet planes under the Mutual Defense Program now being threshed out by the 12 North Atlantic Pact nations.

▶ **Vanishing Funds.** Of the $2.6 billion USAF was given to buy new planes in the defense supplemental following the Korean outbreak, $400 million has evaporated—in price increases. And plane costs are hopping up at the rate of one percent a month. This means that to implement the new programmed 69-group force, USAF will need substantially more than $400 million additional in funds before the year is out.

New Leaders

• **Gen. George Marshall,** the Defense Department's new secretary, will let Chairman of the Joint Chiefs of Staff, Gen. Omar Bradley run the military show. Bradley and Chairman Carl Vinson of the House Armed Services Committee, the strong-man on defense matters on Capitol Hill, will be a smooth-working team. Marshall will concentrate on keeping defense in step with foreign policy, coordinating with his long-time friend, Secretary of State Dean Acheson. Marshall, father of the plan for economic reconstruction of Europe, will put Europe first and the Pacific second in building our overseas defense bulwarks.

• **Delos Rentzel,** new chairman of the Civil Aeronautics Board, is expected to be a dominating one-man ruler. Congress urges it: "Will you please be a chairman and not just another member of the Board!" Washington's Sen. Warren Magnuson directed.

Chairman of the Commerce Department Appropriations Subcommittee, Rep. John Rooney, whose personal feuding with ex-CAB Chairman Joseph O'Connell figures in the slash in CAB funds for this year, promptly predicted Rentzel would: "I am strong for him because I know he will shake the place up and down and get some order out of the mass—or mess—of confusion that is now the Civil Aeronautics Board."

• **Donald Nyrop** starts off as Civil Aeronautics Administrator with the valuable asset of strong bi-partisan support in Congress. Both Republican senators from Nebraska, Nyrop's home state, held no bars to endorsing him. Neither did Nebraska's Rep. Karl Stefan, top-ranking minority member of the Commerce Department Appropriations Subcommittee, which passes on CAA's budgets.

New Laws

Before taking off for political campaigning back home, Congress completed action on the following measures:

• **Prototype Program.** Authorizes $12.5 million over a five-year period for testing costs on new commercial cargo and transport planes. CAA, which will administer the program, is drawing up the first-year segment. If Budget Bureau clears funds, as CAA hopes, Congress can act on them and the program can get underway before the year's end.

• **National Science Foundation.** Grants $225,000 to start it going. The President will shortly name a $15,000-a-year administrative director for the foundation and the 24 members of its policy-making board. They will aim to map out a program by the end of the year. The foundation could then move ahead in January with its authorized $15 million-a-year basic research program.

• **Tax Write-Off.** Provides for stepped-up amortization for aircraft and other defense plants to spur construction. It permits write-offs of plant costs, for tax purposes, of 20 percent a year over five years, instead of 10 percent a year over a 10-year period.

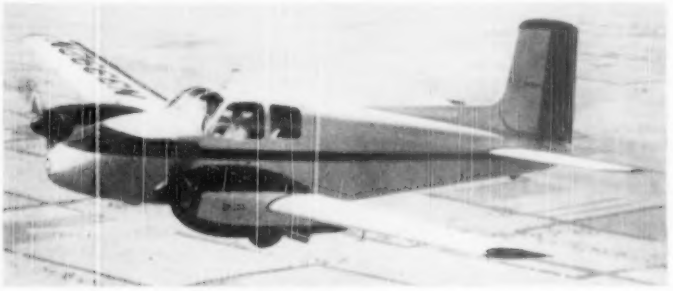
• **Transport Tax Dodging.** Ends the widespread evasion of the 15 percent airline tax through ticket purchases outside the country. The provision makes the service, instead of the ticket, taxable. This means that the tax will have to be paid on all trips beginning and ending in the U. S.—regardless of where the ticket is purchased.

• **AF Electronics Center.** Provides $3 million for setting up the center at the $66-million Griffiss AFB, Rome, N. Y. It will consolidate the work now carried on at Wright Field, the Watson Laboratories at Eatontown, N. J., and Cambridge Field Station near Boston.

• **Aircraft Certification.** Authorizes CAA to designate private individuals to inspect aircraft for certification. CAA has been doing this for several years, but without clear legal authority. Air Line Pilots Assn. has complained. ALPA President David Behncke made an all-out, but unsuccessful, fight to defeat the legislation which, he objects, will turn over CAA inspection functions and safety regulation to aircraft manufacturers and airlines.

▶ **New D. C. Airport.** Grants $1 million for acquisition of land and preliminary planning on a new $14-million airport in the vicinity of Washington, D. C.

SALES & SERVICE



Twin-Bonanza prototype on one of its test flights which now total over 200 hours.

Twin-Bonanza on Military Tour

Three services request demonstration of Beech's new light transport. Spring deliveries still scheduled.

Beech Aircraft's Twin-Bonanza light transport has taken time off from its final tests at the factory in Wichita, to take on a "command performance" tour of U.S. military bases for viewing by high-ranking USAF, Army and Navy officers.

The demonstration tour, requested by the military officials, will permit on-the-spot informal evaluation of the plane for military duties.

Representing the company on the tour is Lynn D. Richardson, manager of sales and Washington representative; Ralph Hermon, staff engineer; Claude Palmer, demonstration pilot; and Carl F. Thomas, technician. Special literature has been made up to cover points of military interest, with luxury appointments played down. The company sees the new craft useful as a twin-engine trainer, photo, ambulance or cargo plane.

Delivery of the first Twin-Bonanza production models are still scheduled for next spring. Although accelerated defense schedules have made uncertain future deliveries of critical materials for non-military business transportation equipment, Beech several months ago started a stepped-up production program to handle commercial plane and service activities concurrent with rapidly expanding military output. Thus at present, the company sees a fair share of Twin-Bonanza production available to civilian buyers.

The five-six placer has already piled up well over 200 hours of service flight testing and all structures have been tested to an 8G flight load factor.

▶ **Performance**—Powered by two Lycoming GO-435-C2 engines rated at 260 hp. at 3400 rpm. at sea level, Twin-Bonanza top speed on the deck is being guaranteed at 200 mph. This and the following performance figures are based on a military gross load of 5095 lb. with 4 fuel load. Cruising speed at 10,000 ft. 105 percent power is 191 mph., and landing speed with full flaps is 59.2 mph. Twin-engine rate of climb is 1650 fpm.; with one engine and full-feathering props, climb is 465 fpm.

Service ceiling is 20,400 ft. Maximum range at 10,000 ft. and at 65 percent power is 935 mi. at a gross weight of 5500 lb. No-wind takeoff over a 50-ft. obstacle can be accomplished in 1050 ft. Landing, under similar conditions, takes 1137 ft.

▶ **Cabin Layout**—Three people can sit in front and three in the rear. Front seat has a width of 54 in., rear seat 52 in., and spacing between front and rear seats is 39 in. Seat belts and anchors are designed to take 28G loads, compared with airline requirement of 6G.

There are two baggage compartments. The rear compartment contains 41 cu. ft. of space and can hold a maximum of 260 lb. The front hold contains 14 cu. ft. and can take a maximum of 330 lb.

The instrument panel, except for gyro instruments, is tilted forward ten degrees, and tab and engine controls are placed in a small off-center panel so as not to interfere with leg room. A protective aluminum shield is provided to minimize occupant injury in event of a crash.

Transocean School Trains Indonesians

Aware that its rich natural resources and strategic location are tempting prizes in an unrestful world, the Indonesian Republic is pushing defense measures including build-up of an air arm. In preparing the groundwork for such a move, a mission from the republic has contracted with Talon Academy of Aeronautics, a division of Transocean Air Lines, to train class of 60 Indonesian students on single and twin-engine aircraft.

Talon walked off with the contract following an intensive bid competition involving a number of domestic and European flying schools. And the school sees this as just the beginning, as indications are the Indonesians are planning a much more extensive flight training program.

The first 60 students will be flown to Oakland Airport in a Transocean transport leaving Jakarta on Oct. 15. Following a briefing at the Academy, the men will be flown to Minter Field, near Bakersfield, Calif., which will handle the flight training.

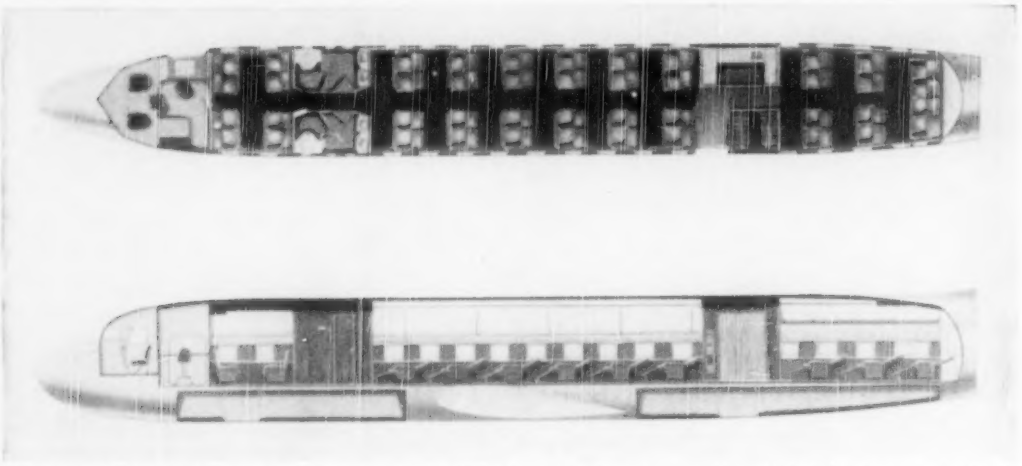
Talon has leased facilities at the installation and will oversee medical care, social welfare and recreation for the students. The contract calls for providing native-type menus.

Talon is credited with having trained more than 600 pilots, in addition to navigators, flight engineers and dispatchers since its founding at Oakland Airport in 1946.

BRIEFING FOR DEALERS AND DISTRIBUTORS

▶ **Civil Plane Distribution**—More than half the nation's 92,442 registered civil planes are owned in ten states, reveals CAA. California leads with 11.4 percent of the national total. The other top states are Texas, Illinois, New York, Michigan, Ohio, Pennsylvania, Kansas, Indiana and Florida. Of the total fleet, 86,533 are single-engine types, 4498 have two engines, 23 have three engines, 575 have four engines, and one eight engines. There are also 469 gliders, 15 lighter-than-air craft and 17 balloons. Ten Ford Trimotors are registered as active.

▶ **Serving the Cotton Bowlers**—Southwest Airmotive, which does a heavy transient business during the football season, offers to arrange bus service to downtown hotels and the Cotton Bowl for its customers. The Dallas service outfit has sent out 1500 letters to flying fans in the South and Southwest informing them of the bus service, with postcard attached for arranging reservations.



LUXURY SLEEPERETTE interior of PanAm's new DC-6B is shown in the cutaways. Alternate high-density version seats 70.

PAA Buys $21-Million Worth of DC-6Bs

Douglas beats out Lockheed for 18-plane order; Panagra contract also probable.

By Alexander McSurely

Earlier delivery date and a substantial price differential were factors in the decision of Pan American World Airways to buy 18 Douglas DC-6B four-engine transports, rather than the same number of Lockheed Model 1049 Constellations, industry sources said last week.

The contract went to Douglas after a prolonged competition between the two transport manufacturers which had lasted for several months. The price of the DC-6Bs was $21 million, presumably including an inventory of spare parts.

► **Two For Panagra?**—Informed sources told AVIATION WEEK that an additional contract for two more DC-6Bs for Pan American-Grace Airways, which operates a sizeable fleet of earlier DC-6s, is still under negotiation.

Delivery of the first of PanAm's new order is promised in the fall of 1951. It will put the big international airline in the unique industry position of operating fleets of all three of the U. S. post-war four-engine transports, since PanAm already has sizeable quantities of Boeing Stratocruisers and Lockheed Constellations.

The DC-6Bs are credited with a cruising speed of 325 mph. at 23,000-ft. altitude, with Pratt & Whitney R-2800 CB-17 engines at high blower. These engines are rated at 2500 hp. each for takeoff, with a normal rating of 1900 hp. They are fitted with three-blade reversible-pitch Hamilton Standard hydromatic propellers of 13 ft. 1 in. diameter.

Cabins are to be pressurized for a 5000-ft. simulated altitude at actual altitude of 20,000 ft.

► **500-Gal. Capacity**—An absolute range of 5140 miles is quoted, with a 5400-gal. fuel capacity. A maximum gross weight for takeoff of 106,000 lb. is given, with an 85,000-lb. landing gross weight. At the 106,000-lb. weight, wing loading is 72.5 lb./sq. ft. and power loading (takeoff power) is 10.6 lb./bhp.

► **Interior Plans**—The more luxurious of two interior arrangements ordered by PanAm for its new Douglas Clippers calls for a 44-passenger sleeperette interior divided into three compartments. An alternate version is a higher-density seating arrangement for coach-type operation with perhaps 70 seats. PanAm has not yet indicated how many of each interior arrangement will be ordered. This may vary depending on changes in traffic and route conditions in the next six months or so.

In external dimensions the planes are similar to the DC-6Bs ordered by United Air Lines, the DC-6A Liftmaster, and the eleven R6D cargo planes recently ordered by the Navy.

Fuselages are 105 ft. 7 in. long, or 5 ft. longer than fuselages of the original DC-6 planes which have now built up an operational record of 13-billion passenger miles in their four years of domestic, international, and foreign airline operation. Wingspan (117 ft. 6 in.) and overall height (28 ft. 8 in.) are the same as in the original DC-6s. Power plants will provide 100-hp. more each for takeoff and at normal rating than the earlier R-2800 engines used in the DC-6.

► **"Finest In Class"**—Selection of the DC-6B-1198 was made, "because our engineering and operations studies have convinced us that it is the finest in its class for the requirements of our international routes," Franklin Gledhill vice president in charge of equipment purchases said.

"The new plane is a further development of the conventional DC-6 which has operated 13-billion passenger miles to date. We anticipate that the established passenger appeal and proven reliability of the DC-6, plus the increased speed, capacity and range of the new version will provide the utmost in passenger satisfaction.

"From the airline operator's point of view, the DC-6B promises high performance with low operating costs," Gledhill concluded.

NONSKED AIR COACH organizers, Amos Heacock, ACTA president (left), and John Mark, coordinator, prepare to carry their case for greater recognition to CAB.

Nonsked Organization Sets Goals

New group sets up fair advertising code, standard fares and commissions; will provide legal aid.

By month's end, Aircoach Transport Assn. may have standard fares in force for all large irregular air coach carriers. This is an early step in ACTA's drive to stabilize nonsked coach rates and agency commissions, and to police the advertising of members.

Ultimate goal of ACTA is to establish its uncertificated coach carrier members as a going industry with an officially recognized place in air transport. That would require a change in present CAB ruling and exemption policy. But the first step planned after organization is for all large irregulars to file together at CAB for standard tariffs.

ACTA members—more than 21 carriers and 90 agencies—represent 90 percent of the volume of nonsked coach service over major routes, according to President Amos Heacock.

▶ **ATCA Program**—Here is the ACTA program adopted at a recent general membership meeting:

• **Tariff stabilization.** Stabilize fares at $88 transcontinental fare (twin engine); $99 (four engine); Miami-N. Y. $39-$43; Miami-Chicago $43-$47; maximum reduction of 10 percent on roundtrip ticket.

• **Fair advertising.** Prevent misrepresentation in advertisements. All members sticking to the rules may use the ACTA emblem of approval in advertisements.

• **Agency commissions.** A standard agency commission rate will be set for each city.

• **Legal aid to members.** ACTA attorneys will fight civil court appeals coming out of CAB suspension of individual exemption applications of ACTA members. ACTA will pay up to a set maximum for private counsel of any member.

• **Seek CAB approval.** Legal counsel will request CAB to consider a workable plan whereby large irregular carriers will be granted certificates. Such certificates would provide full enough utilization of planes for profitable operation. (Under the May 25 interpretation of CAB ruling, they may not operate more than three flights a month between any two of the seven major cities. ACTA contends it is impossible to operate under such a low utilization and still make money.)

• **Fight for exemption**—ACTA's legal staff is instructed to challenge in Federal Court the "three-trips formula" of CAB; challenge CAB's lifting of blanket exemptions and failure to issue individual exemptions; seek injunctive relief from the CAB restrictions; challenge validity of Regulation 291 in Federal Court.

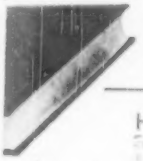
Regulation 291 requires that the carriers must operate on the basis of "irregular and infrequent flights."

▶ **Anti-Trust Suits?**—Legal counsel may explore possibility of "anti-trust" suits against the scheduled airlines, naming the CAB as co-conspirator."

ACTA will ask other major federal government agencies to urge Defense Dept. to seek a CAB moratorium on frequency and regularity regulations during the present emergency. Many ACTA members are now transporting war materials and personnel to the West Coast.

ACTA Coordinator John Mark says the association has made considerable progress on its initial aim—to bring order out of chaos among carriers and agencies. Mark is ACTA's industry police chief. His job is to keep the members carriers and agencies in line under the

Aircraft design details in 3 dimensions



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AIRCRAFT DESIGNERS' DATA HANDBOOK

By *Leslie J. Neville*

Director, Standard Documentation Reference Center, Institute of the Aeronautical Sciences

532 pages, 6 x 9, 788 illus., $10.00

THIS book makes the aircraft engineer available to a vast design literature in one concise unit as regards to particular design problem he is concerned with. It presents complete, easy-to-use three-dimensional drawings that show design details for a variety of aircraft, engines and aircraft equipment. First published by MODERN MACHINE AVIATION, these three-dimensional drawings were originally intended especially for engineers who referred to them. Now they are available together with scores of other drawings in this one volume, in the first book of its kind for aircraft designers.

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ACTA code of fair practices. He carries no big stick, but relies on industry cooperation. He says cooperation is good because most people now see the nonsked operators must "hang together now or hang separately later on."

▶ **Hard Fight**—But President Heacock and his legal aides in Washington are having a tougher time storming Capitol Hill, the Pentagon, and CAB in a legal fight for survival.

CAB interprets the existing law as meaning a carrier must either get certificated as a scheduled line—with all the responsibilities as well as privileges—or else remain a "tramp-steamer type" outfit operating without regular schedules. That is the law established in 1938.

Any change in this CAB rule might come from these sources:

- **Congress can change the law.** But so far Congress has made no such move.
- **Defense Dept. can tell CAB** that temporary exemptions for nonskeds are in the best interests of national defense during the emergency. But Defense officials thus far are not asking for any change in the present CAB interpretation of the law.
- **CAB might liberalize** its interpretation of the law of its own will. Until now, there has been no sign of a change in CAB thinking. ACTA hopes that if it can get its members operating in orderly fashion, CAB might possibly modify the three-trips-a-month rule.

▶ **Decision Soon**—CAB will probably reach a final decision on whether and how to grant individual exemptions some time this fall. If the Board sticks to the strict rule, most of the irregulars are likely to fail, or else drastically cut their present scale of operations. But a few may get themselves certificated as regular all-coach lines.

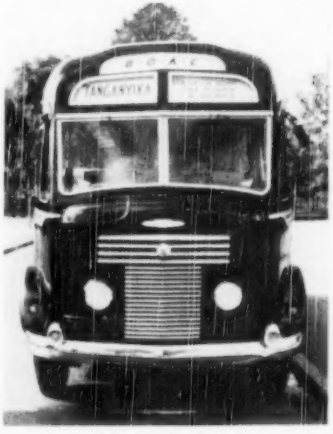
Meanwhile, ACTA executive board and legal counsel are carrying on their desperate fight for survival as large irregular carriers of passenger traffic.

▶ **How It Began**—ACTA grew out of a Miami mass meeting protesting the CAB three-trip rule of last May 25. Nonsked coach carriers, hotel operators, and chamber of commerce called for creation of a nationwide ACTA. The association was founded on June 25. Two months later it went into high gear after members voted a program and elected permanent officers.

Executive board last week established a Los Angeles branch to further the campaign to organize the industry. Los Angeles, Miami, New York and Seattle are the four areas in which ACTA is organizing coach carriers. These cities are the home bases of almost all the large irregular passenger carriers.

All but Los Angeles carriers and agents had already been integrated into the ACTA national association since Aug. 26.

The executive board is following up the Los Angeles meeting with final get-togethers in New York, Miami and Seattle. Virtually all carriers and agents



GLOBAL BUS

BOAC passengers embarking at London find the international flavor of their trip extends even to the airport bus ride. Instead of a flight number, the destination sign may read like the one above: Tanganyika, via Sicily, Egypt, the Sudan and Kenya.

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Carry MAPCO Hot Food Ovens and Liquid Containers

SETTING new standards for service and passenger comfort. Capital's new Constellations leave nothing to be desired. Sound planning in galley equipment matches the other functional appointments which so successfully distinguish these aircraft.

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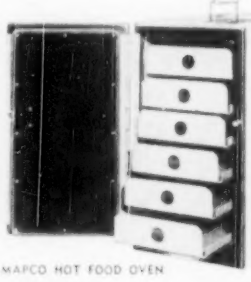

MAPCO HOT FOOD OVEN

MANSFIELD AIRCRAFT PRODUCTS COMPANY

Manufacturers of Complete Air-Borne Galley Equipment

MUNICIPAL AIRPORT, MANSFIELD, OHIO

in Seattle and Miami and a majority in New York have already voted to follow ACTA code of ethics. Mark reports. That is why, with the signing of Los Angeles, ACTA should be ready to roll with standard fares and agency commissions and fair advertising by the end of October.

► **Executive Board**—These are the officers of ACTA's board:

Amos Heacock, Air Transport Associates, Inc., Seattle, president; I. E. Hermann, Great Lakes Airlines, Los Angeles, first vice president; John Belding, Continental Charters, Inc., Miami, second vice president; H. B. Robinson, Peninsular Air Transport, Inc., Miami, secretary; O. H. Smith, Modern Air Transport, Inc., New York, treasurer; John Muk, unaffiliated, full-time coordinator.

Viscount Completes Test Operations

The Vickers Viscount, first turboprop transport to go into scheduled passenger service (AVIATION WEEK Aug. 28), has completed its initial periods of test operations over British European Airways' London-Paris and London-Edinburgh routes.

During the experimental period, the Viscount carried a total of 1838 passengers on 44 roundtrips involving 121 hr. 48 min. flying time. The ship has now returned to Vickers-Armstrongs, Ltd., for a complete examination of airframe, powerplants and other equipment.

The Viscount used in the London-Paris and London-Edinburgh service is a prototype of the larger 40-passenger Viscount which is slated to begin regular service on BEA's European routes in the spring of 1953. BEA recently signed a contract for 28 Viscount 701s—the production version.

Midway Proposes Chicago Shuttle

Authority to operate a lightplane shuttle service for trunkline passengers between airports in the Chicago area and points within 100 miles is being sought by Midway Airlines.

The Illinois company, formerly known as Chicagoland Airways, wants a certificate to make scheduled flights with passengers and cargo (no mail) from Chicago Midway Airport to Sky Harbor Airport and from Midway Airport to Meigs Field. Other points in the 100-mile radius would be served on a demand basis.

Midway President Hugh Riddle asked CAB to grant his company an exemption to operate the service pending final decision on the certificate

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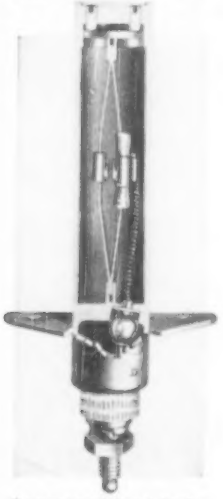

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application. The company proposes using Cessna 195As, equipped with crosswind landing gear, in the shuttle operation.

ICAO Sets Up Search-Rescue Plan

Such diverse units as camel corps, alpine teams and rescue ships would be part of a round-the-world network of search and rescue services proposed to its 58 member states by the International Civil Aviation Organization. The network would aid distressed aircraft, regardless of nationality.

The plan is outlined in a new set of standards and recommended practices which will become Annex 12 to the ICAO Convention, effective Dec. 1, unless in the meantime a majority of the members disapprove.

Under the scheme, contracting members would permit immediate entry into their territories of personnel and equipment needed to undertake search and rescue, subject to certain provisions. The annex recommends that packages dropped to survivors be marked with a color code to indicate contents. A standard means of communication would also be utilized.

SHORTLINES

► **Bonanza Air Lines**—Gets a temporary increase in mail pay from CAB. Temporary rates, retroactive, are: Dec. 19, 1949—June 30, 1950—60 cents a mile; to Dec. 31, 1950—55 cents; and on and after Jan. 1, 1951—50 cents.

► **American Airlines**—offers a 14-day package tour on DC-6 coaches to Mexico City and Los Angeles and back—$394 from Chicago or $491 from New York (plus tax). This includes hotel in Los Angeles and in Mexico City, plus guided tours. . . . Set a new air-freight record for LaGuardia Airport Sept. 15 by carrying 104,100 lb. of freight outbound. August record of 2,012,231 lb. will probably be topped this month, American reports. . . . Has filed at CAB for single-plane interchange with Braniff Airways on DC-6 run between Houston and San Antonio and West Coast cities. . . . AA will repost World Series and football scores to passengers on game days through the fall season.

► **Braniff Airways**—CAB denied its application to cut excess baggage charge 50 percent.

► **Braniff International Airways**—Sent a team of sales managers on a 7600-mile round trip to Buenos Aires. The group will spend two weeks calling en masse

on over 550 U.S. companies doing business in B. A.

▶ **Capital Airlines**—Mrs. Franklin D. Roosevelt christened carrier's "The Spirit of World Peace"—fourth Constellation commissioned out of five planned for New York to Chicago and Milwaukee service. Like the others, this plane is fitted for luxury, with lounge forward, Lucite doors, a pair of love birds, potted plants. Ceremony at LaGuardia Sept. 20 was attended by about 100 United Nations officials.

▶ **KLM Royal Dutch Airlines**—It said to be reducing its staff of 12,000 by 10 percent. Reason is pressure from the Dutch government, largest stockholder.

▶ **Mid-Continent Airlines**—Appointed C. H. Calhoun vice president of engineering and maintenance. He was formerly superintendent of radio-electrical and accessory overhaul for Northwest Airlines at Minneapolis.

▶ **National Airlines**—And Aerovias Guest begin service Oct. 1 on New York-Mexico City run with unlimited stop-over at Miami for $142.90—same price as direct flight to Mexico City. Aerovias Guest plans to increase its flight frequency to daily service about Nov. 1. . . . National is offering seven-day anglers' tour from Washington to Fort Myers, Fla. Package includes fishing, hotel, swimming, golf and tennis.

▶ **Northwest Airlines**—Lost an arbitration case with International Assn. of Machinists. Cost: $40,000 wages IAM claims is members lost when Northwest farmed out overhaul work on four DC-4s last winter.

▶ **Pan American World Airways**—Plans to open service to Paris and Rome as soon as State Dept. gets approval of French and Italian governments, now the merger with American Overseas Airlines is consummated. Last-minute objection of Trans World Airlines that merger should be delayed until foreign governments approved TWA's new services to London and Frankfurt was denied by CAB. . . . PAA withdrew application for a 575 tariff ("space available") from Fairbanks to Seattle on the hour appointed for CAB hearing. Air Transport Associates, Inc. had filed protest, claiming the rate was below PanAm's operating cost. Following PanAm's withdrawal, the four non-scheduled lines operating the route announced they would file for a rate raise to 579 (present nonsked rate, southbound, $560).

▶ **Pan American-Grace Airways**—Has put cameras aboard its planes so passengers may snap the much-advertised scenic beauties of Panagra's routes.

▶ **Pioneer Air Lines**—Cut mail pay calculated to give a pre-tax income of 3.93 cents per revenue plane mile—2.44 cents net income after federal income tax. This gives Pioneer a profit per mile within the range of the other feeder lines. But it gives more than an 8 per cent return on investment. So CAB comes in Postmaster General's recommendation that excess profits over a "fair return on investment shall be placed in an earnings equalization reserve."

▶ **Swiss Air Transport**—And Scandinavian Airlines System are taking turns flying a daily run from Zurich to Copenhagen. There has been no regular daily connection—yet on some days both airlines were flying the same route in one direction. (AVIATION WEEK June 7).

▶ **Trans World Airlines**—And Chicago and Southern Airlines have filed with CAB for interchange of planes on single plane service from Houston to Pittsburgh and New York. . . . TWA has opened a sales office in Sydney, Australia, under Percy F. Bell, sales manager for the South Pacific district. Idea is to promote airline and travel agency traffic on TWA's Pacific, Near East, Atlantic and U.S. routes. . . . Carver

AN INVITATION TO

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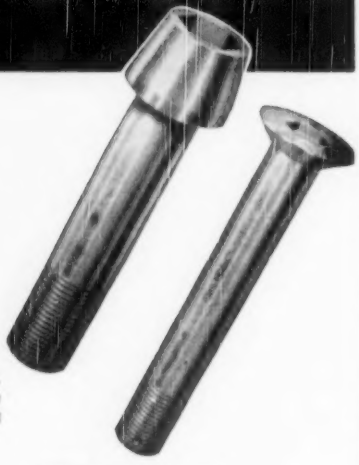

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has started non-stop Constellation service from Washington to St. Louis. This lops two hours off the old schedule. Through service to the West Coast is also offered.

▶ United Air Lines—Has started converting seven DC-3s to 28-passenger capacity. United has not announced the schedules, but says the planes will be used on "certain segments of the main line where load factors are high but where use of larger equipment is impractical." Installation of seven rows of double reclining seats on either side of the aisle will take about three weeks per plane. Whole project should be completed by Jan. 5. . . . UAL will start operating five roundtrips weekly on its new direct route from Los Angeles to Honolulu.

▶ Western Air Lines—Opened ticket office to give 24-hour service in downtown San Francisco—reportedly the first such office in the country. . . . WAL has employe-designed electric eye to warn ticket agent of approaching customer. Idea is that a man can get paper work done in adjoining office, and still greet customers at the ticket counter.

▶ Wiggins Airways—Has increased its service at Albany and seven New England cities. Boston now has 18 Wiggins arrivals and departures daily, and Albany 14. Wiggins is the only "local and feeder" line in New England serving 20 cities. It recently applied for entry into New York City via routes not now served by any line.

CAB SCHEDULE

Oct. 2—Hearing on renewal of Frontier Airlines' feeder certificate. (Docket 4349 et al.)

Oct. 4—Hearing on CAB's investigation of Eastern Air Lines' proposed Miami-San Juan coach fare. (Docket 4305.)

Oct. 6—Hearing in Latin American air freight case. (Docket 2488 et al.)

Oct. 10—Oral argument on new southern service to the West. (Docket 1102 et al.)

Oct. 10—Prehearing conference on service to Mason City, Iowa. Postponed from Sept. 19. (Docket 3393.)

Oct. 16—Hearing on TWA and American Overseas Airlines requests to suspend services at Philadelphia on trans-Atlantic routes. Postponed from Sept. 18. (Docket 4228 et al.)

Oct. 18—Hearing on extension of Los Angeles Airways' helicopter mail certificate and for additional authority to carry passengers. (Docket 3807.)

Oct. 19—Hearing on Lehman Brothers' interlocking relationships case involving partners of firm holding airline directorships. Postponed from Sept. 11. (Docket 1052 et al.)

Nov. 7—Hearing on application of Compania Dominicana de Aviacion for foreign air carrier permit from Ciudad Trujillo, Dominican Republic to San Juan and Miami. (Docket 4361.)

Dec. 11—Hearing on CAB's investigation of West Coast passenger fare structure. (Docket 4385.)

Jan. 8, 1951—Hearing in Big Four mail rate case. (Docket 2849 et al.)

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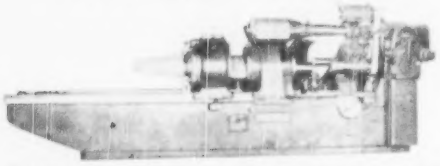

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WHAT'S NEW

New Books

Metals at High Temperatures, by Frances H. Clark, consulting metallurgist, is a compilation of the most recent available data on the subject, including a great amount of tabular data giving the properties of latest alloys developed.

The text begins with a theoretical discussion of the plasticity of metals with special consideration to the effects of high temperatures. Creep in metals and alloys is covered comprehensively. There is a section on test methods at high temperatures and current manufacturing methods for heat resistant alloys.

Published by Reinhold Publishing Corp., 330 W. 42 St., New York, 372 pages including index, price $7.00.

New Quarters

Airlanes has opened new offices at 270 Park Ave., New York 17, N. Y. Phone number is MUrray Hill 8-9451.

Tuco Products, Inc., has purchased six buildings at 120 Lister Ave., Newark, N. J., to serve as a manufacturing and laboratory center for its Atlantic division. Included are storage tanks of 950,000 gal. capacity. Sidney E. Smith is general manager and G. O. Yinger is manager of manufacturing.

Telling the Market

Air Cruisers Co., designers and makers of sea survival equipment, have just issued an 8-page catalog, aimed at airline and other plane operators, describing CIH-1 and AD-4 life jackets for children and adults. Write the concern at 32 Wellington Ave., Clifton, N. J. . . . Production heads can obtain key data on entire line of Boots self-locking nuts fully illustrated in handy 24-page catalog, first to be issued in several years. Write Boots Aircraft Nut Corp., Stamford, Conn. . . . Airport operators can get complete details of installation of standardized airport taxiway lighting system giving data on the Line Material Co.'s new medium intensity Taxiway Marker Light. Write the company's Airport Lighting division, E. Stroudsburg, Pa., and ask for Bulletin 49085. . . . Catalog supplementing Aeronautical Obstruction Lighting with Thompson Disconnecting and Lowering Hangers, can be obtained by writing Thompson Electric Co., 1101-98 Power Ave., Cleveland 14. . . . Engineers, chemists, and production personnel will be interested in 1950 edition of the process manual, Finishes for Aluminum, 124-page handsomely published volume detailing not only processes but also characteristics of finishes. A section is included on controls and tests. Write on letterhead to Reynolds Metals Co., Technical Editorial Service, 2700 So. Third St., Louisville, Ky.

ADVERTISERS INDEX

AVIATION WEEK

OCT. 2, 1950

BG Corporation, The ..... Front Cover
Agency—Buchanan & Co., Inc.
Breeze Corp., Inc. 8
Agency—Burke Dowling Adams, Inc.
Champion Spark Plug Co. 34
Agency—MacManus, John & Adams, Inc.
Cities Service Oil Co. 50
Agency—Ellington & Co., Inc.
Collins Radio Company 42
Agency—W. D. Lyon Co., Inc.
Connecticut Hard Rubber Co., The 42
Agency—Fuller Brothers Adv.
Control Products, Inc. 6
Agency—George Homer Martin Associates
Dalmo Victor Company 43
Agency—Elliott, Daly & Sherman Adv.
Elastic Stop Nut Corp. of America
Fourth Cover
Agency—J. Walter Thompson Co.
Fenwal, Incorporated 41
Agency—James Thomas Chirurg Co.
General Controls Company 39
Agency—Fuller & Jorgenson, Inc.
Kidde & Co., Inc., Walter 5
Agency—Cunningham & Walsh, Inc.
Lockheed Aircraft Corp. 50, 51
Agency—Foote, Cone & Belding Adv.
Lockheed Aircraft Corp. 45
Agency—Hal Stebbins, Inc.
Mansfield Aircraft Products Co. 40
Agency—Odell & Associates
McGraw-Hill Book Co., Inc. 39
Ohio Seamless Tube Co., The 48
Agency—Howard Swink Adv. Agency, Inc.
Phillips Petroleum Co. 3
Agency—Lambert & Feasley, Inc.
Piasecki Helicopter Corp. 49
Agency—B. K. Davis & Bro.
Rumpl Company, The Dave 9
Agency—Kimball Advertising Agency
Searchlight Section 45, 46, 47
Shell Oil Company 10
Agency—J. Walter Thompson Co.
Sperry Gyroscope Company ..... Third Cover
Agency—Charles Dallas Reach Co., Inc.
Standard Oil Company of Indiana Second Cover
Agency—McCann-Erickson, Inc.
Standard Pressed Steel Co. 44
Agency—R. E. Lovekin Corp.
Steel Products Engineering Co., The 6
Agency—Gover, Newell & Ganger, Inc.
Titeflex, Incorporated 4
Agency—Robert L. Mathoff, Inc.
Wright Aeronautical Corp. 26, 27
Agency—Charles Dallas Reach Co., Inc.

■

PROFESSIONAL SERVICES 48

■

SEARCHLIGHT SECTION
(Classified Advertising)

EMPLOYMENT
Positions Vacant 45
Positions Wanted 45
Selling Opportunities Wanted 46
SPECIAL SERVICES
Contract Work 46
EDUCATIONAL
Books 46
Schools 46
EQUIPMENT
(Used or Surplus New)
For Sale 46, 46, 47
WANTED
Equipment 46

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EDITORIAL

Our Turboprops Lead

The British don't lead the world in turboprop power any more. We do.

Britain's impressive exhibition at Farnborough last year set off a barrage of startling press criticism of our own aircraft engine industry. A year ago, our cousins on the other side were not too modestly reminding the world that they were leading us by a hefty margin in aeronautical gas turbine development. This was true both for turboprop and pure jet.

But there have been some changes made. The Navy teamed up with United Aircraft Corp. the other day in unveiling the new Pratt & Whitney T-34 Turbo Wasp. It presents striking new evidence of an American trend in turboprops that engineers say is far ahead of anything in power output that our friendly British allies have yet displayed. All of which, even the British will admit, is good news for our side and bad medicine for the Russkies.

The 5700-hp. P&W turboprop boasts a ratio of more than two horsepower per pound of engine weight. Its specific fuel consumption compares favorably with the biggest piston engines in their top power ranges. Furthermore, it is the second American turboprop in this class to reach the flight test stage within six months. The first was Allison's 5500-hp. T-40.

Both the Allison and the Pratt & Whitney plants appear to be head and shoulders above the best the British have to offer. A statistical table in AVIATION WEEK, Sept. 11 dramatized this.

So, in the turboprop segment of the promising gas turbine field, the U. S. has not only whittled away the British lead in horsepower. We have put a substantial margin of superiority between our latest achievements and those across the Atlantic.

Which means it's time for some praise. The engineering staffs of Allison and Pratt & Whitney deserve generous portions. Let there be no mistake about that. And they will concede, with us, that the Navy's Bureau of Aeronautics is eligible for posies too, not forgetting the Bureau's Chief, Rear Adm. A. M. Pride, who showed he had a mind of his own and knew how to stick to his guns even amid the vastness of Washington bureaucracy where it is so hard to stand up against the prevailing tide of the moment. It was BuAer, under Pride's leadership, that held out against the trend of two years ago when others were labeling the turboprop merely as an inconsequential point en route to the pure jet age.

Admiral Pride and his staff stoutly maintained that the turboprop would carve its own permanent niche in the aircraft powerplant field complementing—not competing with—the turbojet. Looks like time is proving him right.

The Air Force, it is true, bred and nurtured the Curtiss-Wright T-35 and the Northrop T-37 to advanced development, but it cut off the funds to continue them. It was about then that Air Force chiefs were echoing several other voices which were already heralding the coming of the pure jet era for 1950.

Pride and his bureau never deserted their Allison and Pratt & Whitney turboprop projects, however, with the result that now the U. S. has assumed unchallenged leadership—power-wise—in this field. Operationally, the British may be ahead. The prototype Viscount with four Darts is flying London-Paris passengers, and the Wyvern carrier fighter is proving itself. The U. S. has two turboprop planes flying, the P5Y and A2D.

The Navy is finding turboprops valuable in attack and anti-submarine planes where a combination of speed, range, load-carrying and medium altitude work are needed. And the Air Force now finds a need for these powerplants in tactical air support craft, medium bombers, and transports. BuAer has been generous in allowing the commercial airlines to have access to equipment and technical data. Several important commercial aircraft are scheduled for turboprop tests.

So, let's face it. By refusing to change its course BuAer has preserved and developed a form of aircraft power that we would not otherwise have or, if we did, we would be dependent on foreign sources of supply.

Meanwhile, the engineering race on the other vital front of the gas turbine struggle gets hotter. Don't discount the Americans in the pure jet field, even though the British still have us bested for the time being.

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From Page 1, Cleveland Plain Dealer, Sept. 4

With its strong right hand, aviation battles day and night for safety in flight, and the confidence of the public. With the other it okays dangerous air shows that risk the lives of pilots, hundreds or thousands of spectators, and citizens whose misfortune it is to live within crash range of needlessly stunting aircraft.

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—Robert H. Wood

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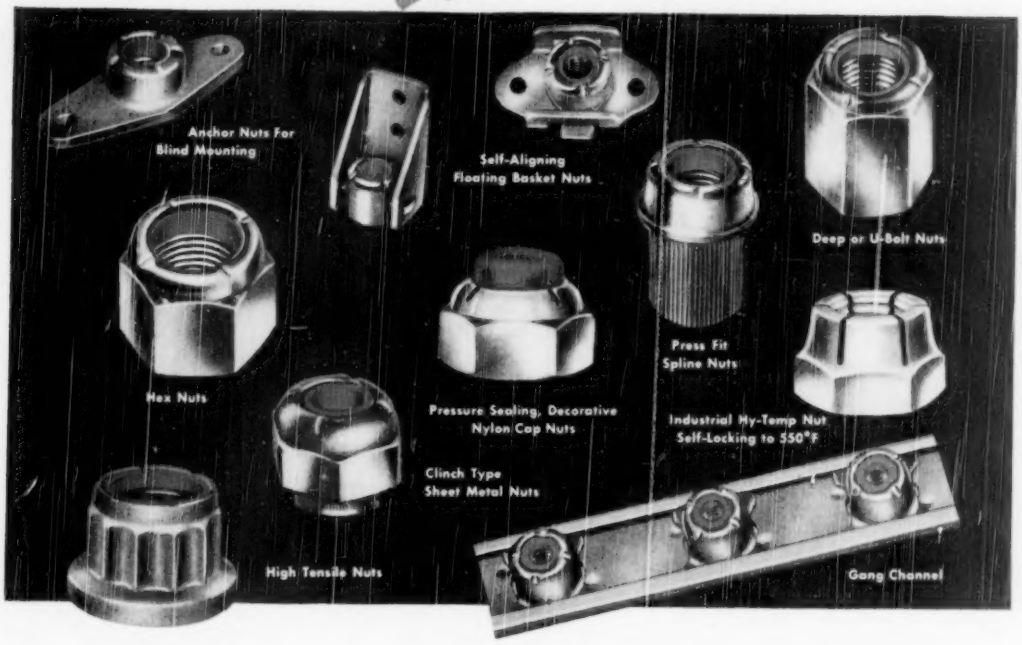

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